G. R. S. IX-5]

Previous references.

1929.

(Sanitary)

File No. 62-19.

Serial Nos. 1-9.

Later references.

P-42

E

GENERAL AND REVENUE SECRETARIAT.

Serial Nos. 1-9.

Part B for September 1920.

SUBJECT.

Construction of rat-proof granaries

Sl 9 To The Dy. Commrs of Districts

No. G. 6433 dt 20.9.20.

Forwards copies of order No. 2718 dt 16.10.19 issued by the Govt. of Madras re construction of rats proof granaries together with copies of type designs for the same.

To The Sanitary Commr,

No. G 6441 dt 20

Forwards copy of the above

WD 2238—GPS—20,000—14-6-26

G. R. S. III—1].

1919.20

1329

GENERAL AND REVENUE SECRETARIAT

(Sanitary)

NOTES.

File No. 62-7e

FILE HEADING.

Construction of rat proof granaries.

From The First Assistant Resident in Singur.

No. 13. Dated 16.1.20 Received 19.1.20

Diary No. 1329 | Enclos. 1/2 Spare Copies. | Serial No. 1

BRIEF ABSTRACT OF LETTER.

Forwards for information G.O. no 271-P.H. 16.10.19 from the Govt. Madras, Local & Municipal Dept. re. type designs for rat proof granaries.

NOTES AND ORDERS.

Submitted for personal & extra draft forwarding.

HH 888 19/1

19.1.20

2) For approval

2nd Member) dcs 19/1/20.

3497 19-1-20

3) HH

4) Issue dcs 22/1/20.

NOTES—First Sheet.

G. R. S. III-2]

General and Revenue Secretariat.

Sang File No. 62 of 1919.

Serial No.

5 From Chief Engineer in Burma
D.10549 of 1st/7th April 1920
Returns the type design for rat proof
frontages of two sending copies of the same
to the Superintendent Govt Printing for the
same being then printed
If submitted. If appd the receipt of the
printed copies will be awaited
Ded 6/8
9.4.20 9/4

1) Yes
acs
1074/20

F

11) Subd. the printed copies of the undrs
Govt of Burma have received, but the type designs
have not yet been recd. The Supdt Govt
printing states that in his memo 2722 G
26.4.20 that the Sketches of
the type designs are being
done. If appd. the receipt of the
type designs will be awaited.
Ded 6/8
22.5.20

E

1) Yes
acs
2245/20.

6 From the Chief Engineer in Burma
20 D 8205 G 26th August 1920
Forwards 200 copies each of the 3
designs of the rat proof frontages & states
that 100 copies of the same have been retained
in his office for distribution with departmental
3) Submitted with 3 drafts for approval or
Ded other orders.
30.8.20 Dlw
1.9.20.

3rd Member) Dlw
Appd
1/9/20.

14)

Secy
9/9
Secy to Govt

NOTE—Contn. sheet.

1820
2.9.20

SubA
1074
GENERAL BRANCH.
12 APR. 1920

(4

G. R. S. III-21

General and Revenue Secretariat.

Sanj File No. 62 of 1919.

Serial No.	
7	To The Agent Mysore Railways. No G 6429 dt 20.9.20 Ltr & a copy & copy of Rule Construction of Rat proof Godowns to gether with Copies of the type designs for the same.
8	To The Pdts of City Municipal Councils of Bangalore & Mysore. No G 6430-1 dt 20.9.20 Ltr & copy of the Madras Govt order re. Construction of Rat proof Godowns together with Copies of the type designs.
	To The Secy Comm No G 6432 dt 20.9.20 Ltr & Copy of the above.
9	To The Secs of Dbs. No G 6433-40 dt 20.9.20. Forwarding Copies of order No 271 PD dt 16.10.19 issued by the Govt of Madras re Construction of rat proof Godowns together with Copies of type designs for the same.
	To The Secy Comm No G 6441 dt 20.9.20 Ltr & copy of the above.

SECRETARIAT III SECTION BRANCH 29 SEP 1920

NOTE—Contn. sheet.

(5 1329)

R. O. 109.—R. P. B.—12-1916.—1,000.

MYSORE RESIDENT'S OFFICE

No. 13 fol 405

Bangalore, 16th January 1920.

62-19-1

G.O. No. 271-P, dated the 16th October 1919, from the Government of Madras, Local and Municipal Department re type designs for rat-proof granaries.

420

RIA

Forwarded with Compliments.

Chief Secretary to the Government of His Highness the Maharaja of

MYSORE.

Government of Madras

LOCAL & MUNICIPAL DEPARTMENT (PLAGUE).

G.O. No. 271 P., 16th October 1919

Type-designs for rat-proof granaries

Recording the proceedings of the Sanitary Board issuing two

READ—the following paper

Proceedings of the Sanitary Board, No. 406/S., dated 10th September 1919.

Read—the following papers:—

Letter—from the Sanitary Engineer to Government.
Dated—the 26th August 1918.
No.—565 G.

(ii)

Endorsement—by the Sanitary Commissioner for Madras.
No.—D. 2499 S.
Dated—the 3rd October 1918.

Resolution—No. 406 S., dated 10th September 1919.

In connexion with the general conclusions arrived at by the conference that met at Madras on the 8th and 9th April 1918 to consider the Plague Regulations in force in the Presidency communicated with G.O. No. 246 P., dated 27th April 1918, the Sanitary Engineer to Government submitted with his letter read above a design, with specification and schedule of quantities, for a rat-proof granary for issue as a type in supersession of design No. III issued with G.O. No. 980 P., dated 5th December 1908. But as this design was found to be defective, the Sanitary Board after careful consideration obtained from the Chief Engineer, Public Works Department, two designs for rat-proof granaries, one for grain store room only based on the Punjab type recommended by Major Norman White, C.I.E., Sanitary Commissioner with the Government of India, and the other for a grain store room with a measuring and packing room attached to it.

2. These two designs are approved as types and will be designated as 'Sanitary Board type-designs Nos. 175 and 176 for rat-proof grain godowns.

3. A note explaining the necessity for these godowns and the precautions to be taken, and the specifications and schedules of quantities to accompany these designs are all issued as annexures to these proceedings.

4. Alterations and deviations from these designs to suit local conditions are permissible.

(True extract)

C. PEDDIE,
Secretary, Sanitary Board

To the Secretary to Government, Local and Municipal Department.
Sanitary Engineer to Government.
Sanitary Commissioner for Madras.
Personal Assistant to the Surgeon-General with the Government of Madras.
Chief Engineer, Public Works Department.
Principal, College of Engineering, Madras.
Resident in Travancore and Cochin.
Sanitary Commissioner for Burma.
Inspector-General of Civil Hospitals, Burma.
Secretary, Board of Public Health, United Provinces.
Secretary, Sanitary Board, Bengal.
Bombay.
Punjab.
President, Corporation of Madras.
Chairmen of Municipal Councils.
Presidents of District Boards.
" of Taluk Boards.
Collectors of districts.
District Medical and Sanitary officers.
Civil Surgeons.
Superintending Engineers.
Tropical Diseases Bureau, Imperial Institute,
Editor, the *Local Self-Government Gazette*, Madras.

No. 271 P., 16TH OCTOBER 1919.

ANNEXURE I.

NOTE TO ACCOMPANY THE DESIGNS FOR RAT-PROOF GODOWNS.

Rats are the carriers of the plague bacilli because they convey the rat flea in their fur from place to place and on account of their intimate connexion with man in human dwellings on the one hand and with grain in godowns on the other, it is of paramount importance that the methods of grain storage and grain transport should be such as to afford no refuge for rats. As rats carry fleas that carry infection and as these fleas are distributed in the grain through rats, it is very necessary to protect the grain against rats. For further details on this subject, the reader is referred to the annexures to G.O. No. 246 P., dated 27th April 1918 and G.O. No. 256 P., dated 4th May 1918. The two designs now prepared are expected to be rat-proof owing to the following features:—

(1) The projecting cutstone Cuddapah slab or reinforced concrete slab all round the building at basement level will prevent rats from climbing up the walls and so gaining entrance into the grain godown.

(2) The floor consists of sand filling in, 4 inches depth of concrete in mortar over it and Cuddapah or granite slabs over the concrete; it is therefore impervious and will not allow rats to burrow up from below.

(3) The walls are of masonry in mortar and will also prevent rats from burrowing through them.

(4) All corners are rounded and rats cannot easily lodge anywhere in the building.

(5) The door is close fitting and rat-proof.

These designs are intended to serve as guides and not to be rigidly adhered to but may be altered according to local conditions so long as the principle of preventing entrance of rats is not lost sight of.

W. HUTTON,
Chief Engineer, P.W.D.

29th July 1919.

ANNEXURE II.

SPECIFICATION TO ACCOMPANY THE DESIGN FOR A "RAT PROOF GRAIN GODOWN."

Type design No. 175

General.—The godown consists of one grain store room 10′ × 10′ to hold about 700 cubic feet of grain when the room is filled to a height of 7′.

2. *Foundations.*—These will be 2′ deep the lower 1′ 6″ being concrete broken brick or stone in lime mortar and the upper 6″ being burnt brick or stone in lime mortar. The depth and width of foundations should, however, be design to suit the nature of soil and sub-soil at site.

3. *Basement.*—This will be 3′ high above the ground level and will be built of burnt brick or stone in lime mortar. At the level of the plinth, there will be a projecting platform in front, of granite stone or ferro-concrete slab 4″ thick, and 1′ 6″ broad, and in the remaining three sides, the projection of slab will be reduced to 9″. This provision has been made to prevent rats from reaching the basement. The granite stone or concreate slab under the doorway shall be secured to the basement by suitable clamps as indicated on the drawing. The projecting portion of slab should have a fall of ¼″ outwards. The filling-in of basement should be of sand well rammed, so as to give no refuge for rats.

4. *Superstructure*—Will be of brick in lime mortar. Rubble stone may be substituted if this is cheaper than bricks.

5. *Flooring*—Will consist of 4″ concrete in surki mortar paved with pressed tiles or Cuddapah slabs, or of concrete itself surface rubbed smooth with portland cement, whichever is easily procurable at the locality.

A damp proof course of cuddapah or stone slabs will be provided for all walls at basement level.

6. *Roofing.*—This will be of Madras terrace to consist of one course of brick-on-edge, 3″ concrete, three courses of flat tiles, and plastered top and bottom with two coats of lime mortar.

7. *Wood-work.*—One of the timbers mentioned in Circular No. 2040-C., dated 27th April 1909, as applicable to table II of Circular No. 234 C., dated 9th January 1908.

8. *Doors.*—This will be battened with teak frames and country wood shutters. Two leaved including clamps and iron fittings, etc., complete to open outwards.

9. *Ventilators*—will be of teak wood glazed with expanded metal or wire netting, so as to admit light and air.

10. *Finishing.*—The walls in superstructure will be plastered inside and outside with lime mortar one coat and whitewashed two coats. All wood work will be painted two coats of approved quality.

W. HUTTON,
Chief Engineer, P.W.D.

Estimate form—Detail measurements.

Detail of work.	Number.	Measurements in feet. Length.	Breadth.	Depth.	Area or contents.	Total quantity of each description of work.
		FT. IN.	FT. IN.	FT. IN.		
TYPE-DESIGN No. 175 FOR A 'RAT-PROOF GRAIN GODOWN.'						
Earthwork excavation for foundations.						
Wall, all round	1	46 0	2 6	2 0	230	
Total, c. ft.	..	..	..	..	..	230
Filling in basement with sand.						
Godown ..	1	10 0	10 0	2 6	250	
Total, c. ft.	..	..	..	..	..	250
Concrete broken brick in lime mortar.						
Wall, all round	1	46 0	2 6	1 6	173	
Total, c. ft.	..	..	..	..	..	173
Brick in lime mortar (foundations and basements).						
Wall, all round	1	46 0	1 6	3 6	242	
Total, c. ft.	..	..	..	..	..	242
Brick in lime mortar (superstructure).						
Wall, all round	1	46 0	1 6	10 9	742	
Parapet including tape cornice ..	1	50 0	0 9	1 0	38	
Total, c. ft.	..	..	..	..	780	
Deduct for—						
Door ..	1	3 0	1 6	6 6	29	
Ventilators	2	1 6	1 6	1 6	7	
Total deductions	..	..	..	..	36	
Net c. ft., less deductions ..	..	..	..	..	..	
'Outstone works.'						
Front plinth	1	14 6	3 0	0 4	15	
Stone to receive iron clamp	1	4 3	0 9	0 4	1	
Lintel over door	1	4 6	1 6	0 6	3	
Lintel over ventilators	2	2 6	1 6	0 4	3	
Total, c. ft. ..	..	..	..	..	..	
Timber wrought and put up.						
Joists in godowns	6	11 6	0 2½	0 8	9·58	
Total, sq. ft., say ..	..	..	..	..	..	10
Battened doors with teak frames and country wood shutters (four leaves including iron fittings, etc., complete).						
Godown door ..	1	3 0	..	6 6	19·5	
Total, sq. ft. ..	..	..	..	..	..	19·5
Fixed glazed ventilators with expanded metal or wire-netting between shutters.						
Godown ventilators	2	1 6	..	1 6	4·5	
Total, sq. ft. ..	..	..	..	..	..	4·5
Flooring with 4" brick jelly concrete rendered smooth by sprinkling 20 lb. of cement for every 100 sq. ft. of surface.						
Godown floor	1	10 0	10 0		100	
Total, sq. ft. ..	..	..	..	..	..	100
Terrace roofing with brick on edge, 3" concrete, three courses of flat tiles top and bottom lime plastered.						
Over godown	1	11 0	11 0	..	121	
Total, sq. ft						121

Estimate form—Detail measurements—*cont.*

Detail of work	Number.	Measurements in feet. Length.	Breadth.	Depth.	Area or contents.	Total quantity of each description of work.
		FT. IN.	FT. IN.	FT. IN.		
Plastering with lime mortar one coat and white washed one coat.						
Wall (inside) ..	1	40 0	..	10 0	400	
Wall (outside) ..	1	52 0	..	14 6	754	
Parapet (top and sides)	1	50 0	..	1 6	75	
Sides of door	2	6 6	1 1½	..	15	
Ventilators	2	4 6	1 6	..	14	
Total, sq. ft.	..	..	..	..	1,258	
Deduct for—						
Door ..	1 × 2	3 0	..	6 6	39	
Ventilators ..	2 × 2	1 6	..	1 6	9	
Total deductions ..	..	..	..	..	48	
Net total, sq. ft. ..	..	..	..	..	..	1,210
Painting two coats.						
Joists	6	10 0	1 6½	..	93	
Door ..	1	3 0	6 6	2 3	44	
Ventilator	2	1 6	1 6	1 0	5	
Total, sq. ft. ..	..	..	..	..	..	142
Cuddapah or stone slabs, 2" thick.						
Exterior wall three sides	1	34 6	2 3	..	78	
Total, sq. ft. ..	..	..	..	..	..	78
Two locking arrangements with bars, etc. ..						No. 2
Iron clamps to secure the slabs under doorways					..	L.S.

Estimate form—Abstract.

Quantity.	Description of work.	Rate. Rs. A.	Per	Amount. Rs.	Total.
	TYPE-DESIGN No. 175 FOR A RAT-PROOF GRAIN GODOWN.				
	Current Madras rates.				
230 c. ft.	Earthwork excavation for foundations	6 0	1,000	1	
250 ,,	Filling in basement with sand	5 0	100	13	
173 ,,	Concrete broken brick in lime mortar	15 9	100	27	
242 ,,	Brick in lime mortar (foundations and basements)	20 10	100	50	
744 ,,	Brick in lime mortar (superstructure)	22 10	100	168	
22 ,,	Cutstone work set in lime mortar	2 8	C.ft.	55	
10 ,,	Timber wrought and put up	4 0	,,	40	
19·5 sq. ft.	Battened doors with teak frames and country wood shutters (four leaves including iron clamps and fittings, etc., complete).	1 14	Sq.ft.	37	
4·5 ,,	Fixed glazed ventilators with expanded metal or wire-netting between shutters.	1 12	,,	8	
100 ,,	Flooring with 4-inch concrete top rendered with cement (Col. Ellis Patent).	8 8	100	9	
121 ,,	Terrace roofing with brick on edge 3-inch concrete three courses, flat tiles, top and bottom lime plastered.	44 1	100	53	
1,210 ,,	Plastering with lime mortar one coat and white-washed one coat.	2 0	100	24	
142 ,,	Painting two coats	2 4	100	3	
78 ,,	Cuddapah slabs 2-inch thick at the basement ..	30 0	100	23	
No. 2	Locking arrangements with bars, etc. ..	5 0	Each.	10	
L.S.	Providing iron clamps to secure the granite slabs under doorways.	..	L.S.	2	
	Total ..	..	..	523	
	Contingencies at 5 per cent		..	25	
	Petty supervision at 2½ per cent ..		..	12	
	Total estimate		..	560	
	Grand total of estimate		.. ..		560

ANNEXURE III

GENERAL SPECIFICATION TO ACCOMPANY THE ESTIMATE FOR A DESIGN FOR A RAT-PROOF GRAIN GODOWN.

(*Type-design No.* 176.)

General.—The rat-proof grain godown consists of one grain store room 10′ × 14′ and one measuring and packing room 10′ × 6′. The grain store room is designed to hold about 1,000 cubic feet of grain if the room is filled in to a height of 7′ 3″.

Foundations will be of 2′ 0″ deep, the lower 1′ 6″ being concrete broken brick or stone in lime mortar and the upper 6″ being brick or stone in lime mortar. The depth and width of foundations should be increased to suit the nature of the soil.

Basement will be 3′ high above the ground level and of brick in lime mortar. At the level of the plinth there will be a projecting platform in front of granite stone or ferro-concrete slab 4″ thick and on the remaining three sides the projection will be reduced to 9″ to prevent rats climbing the basement. The granite stone under the doorway shall be secured to the basement by suitable clamps as shown in plan. The top of projecting platform will be given a fall of $\frac{1}{2}$″ outwards.

The *filling in* of the basement should be of sand well rammed.

Superstructure will be of brick in lime mortar. If rubble in mortar is cheaper than brick work, the walls may be built of the former.

Flooring will be of 4-inch concrete in surki mortar and paved with pressed tiles or Cuddapah slabs or concrete and cement (Col. Ellis' specification) whichever is easily procurable at the locality. A damp proof course of Cuddapah or stone slabs will be provided for all walls at basement level.

Roofing will be of Madras terrace consisting of brick on edge 3-inch concrete three courses of flat tiles and the top and bottom lime plastered.

Woodwork.—One of the timbers mentioned in Circular No. 2040-C., dated 27th April 1909, as applicable to Table II of Circular No. 234-C., dated 9th January 1908.

Doors and windows.—Frames of all doors and windows will be of teakwood and all shutters will be of country wood. Discharge holes may be provided in the grain godown door as shown in the detail plan.

Ventilators will be of glazed teakwood frames as shown in the detail plan so as to admit of light and air.

Finishing.—The interior and exterior walls will be plastered with lime mortar one coat and whitewashed one coat. All woodwork, doors and windows will be wood-oiled two coats.

Cost.—The building shown on the drawing is estimated to cost Rs. 1,150 at current Madras rates.

W. HUTTON,
Chief Engineer, P.W.D.

Estimate form—Detail measurements.

Detail of work.	Number.	Measurements. Length.	Breadth.	Depth.	Area or contents.	Total quantity of each description of work.
CONSTRUCTING A RAT-PROOF GRANARY.		FT. IN.	FT. IN.	FT. IN.		
TYPE-DESIGN No. 176.						
Earthwork excavation for foundations.						
Main wall all round	1	69 0	2 6	2 0	345	
Cross wall	1	9 0	2 6	2 0	45	
Pial wall	1	6 0	1 1½	1 0	7	
Total, c. ft.						397
Filling in basement with sand.						
Grain godown	1	14 0	10 0	2 6	350	
Measuring and packing room	1	6 0	7 0	2 6	105	
Total, c. ft.						455
Filling in basement with earth.						
Pial	1	6 0	2 3	6 5½	87	
Total, c. ft.						87
Concrete broken brick in lime mortar.						
Main wall all round	1	69 0	2 6	1 6	259	
Cross wall	1	9 0	2 6	1 6	34	
Pial wall	1	5 0	1 9	1 0	9	
Total, c. ft.						302
Brick in lime mortar.						
Foundation and basement—						
Main wall all round	1	69 0	1 6	3 6	362	
Cross wall	1	10 0	1 6	3 6	53	
Pial wall	1	6 0	0 9	3 0	14	
Total, c. ft.						429
Brick in lime mortar (superstructure).						
Main wall all round	1	69 0	1 6	13 6	1,397	
Cross wall	1	10 0	1 6	11 3	169	
Pial wall	1	6 0	0 9	3 10½	17	
Total, c. ft.					1,583	
Deduct for—						
Door, large, in front	1	4 0	1 6	7 0	42	
Door, small, in cross wall	1	3 0	1 6	6 6	29	
Door, small	1	2 6	1 6	2 9	10	
Ventilators	2	1 6	1 6	1 6	8	
Lintels	1	12 0	(Volume.)		12	
Total deductions, c. ft.					101	
Net total, c. ft						1,482
Brick cornice work including plastering.						
Exterior all round	1	78 0			78	
Total, r. ft.						78
Cut stone slab.						
Cill of front door	1	6 0	3 0	0 4	6	
Sides of front door	2	4 3	3 0	0 4	9	
Cill of small door	1	4 6	1 6	0 6	3	
Lintel over door, large	1	5 6	1 6	0 6	4	
Do. small	1	4 6	1 6	0 6	3	
Cill of filling door	2	3 6	0 7½	0 4	1	
Over filling door	1	3 6	1 6	0 4	2	
Over ventilators	2	2 6	1 6	0 4	3	
Total, c. ft.						31

13)

Estimate form—Detail measurements—*cont.*

Detail of work.	Number.	Measurements. Length.	Breadth.	Depth.	Area or contents.	Total quantity of each description of work.
		FT. IN.	FT. IN.	FT. IN.		
Timber wrought and put up.						
Joists in grain store	10	11 6	0 2½	0 8	15·97	
Joists in measuring and packing room	7	7 6	0 2	0 5⅛	4·01	
Total, c. ft.	..	..	..	..	..	19·98
Battened door with teak frames and country wood shutters including iron fittings complete.						
Door, large, in front	1	4 0	..	7 0	28	
Filling door	1	2 6	..	2 9	7	
Total, sq. ft.	..	..	..	..	..	35
Battened door with teak frames and country wood shutters (four leaves) with 6 inches square holes and slide shutters including iron fittings complete.						
Door in cross wall	1	3 0	..	6 6	20	
Total, sq. ft.	..	..	..	..	..	20
Fixed glazed ventilators with expanded metal or wire netting between shutters						
Ventilators	2	1 6	..	1 6	5	
Total, sq. ft.	..	..	..	..	..	5
Flooring with Cuddapah slabs 1½ inches thick over 4 inches brick jelly concrete and pointing with cement.						
Grain godown	1	14 0	10 0	..	140	
Measuring and packing room	1	6 0	7 0	..	42	
Total, sq. ft.	..	..	..	..	..	182
Flooring with 5 inches concrete top rendered with cement (Colonel Ellis' patent).						
Over pial	1	3 0	..	6 0	18	
Total, sq. ft.	..	..	..	..	..	18
Terrace roofing with brick on edge 3 inches concrete three courses of flat tiles top and bottom lime plastered.						
Over grain godown, measuring and packing room.	1	22 6	11 0	..	248	
Total, sq. ft.	..	..	..	..	..	248
Plastering with lime mortar one coat and white washed one coat.						
Interior—						
Wall all round grain store	1	48 0	..	11 3	540	
Wall all round measuring and packing room.	1	26 0	..	11 3	291	
At sides of pial	2	3 0	..	7 4¾	45	
Sides of door, large	1	14 0	1 1½	..	16	
Do. small	1	13 0	1 1½	..	15	
Do. small	1	5 6	1 1½	..	6	
Do. ventilator	2	4 6	1 1½	..	10	
Exterior—						
Wall all round	1	75 0	..	16 0	1,200	
Basement all round	1	75 0	..	3 0	225	
Total, sq. ft.	..	..	..	..	2,348	
Deduct for—						
Door, large	1 × 2	4 0	..	7 0	56	
Door, small	1 × 2	3 0	..	6 6	39	
Filling door	1 × 2	2 6	..	2 9	14	
Ventilators	2 × 2	1 6	..	1 6	9	
Total deductions	..	..	..	..	118	
Net total, sq. ft.	..	..	..	..	..	2,230

6

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Estimate form—Detail measurements—*cont.*

Detail of work.	Number.	Measurements. Length.	Breadth.	Depth.	Area or contents.	Total quantity of each description of work.
		FT. IN.	FT. IN.	FT. IN.		
Wood oiling, two coats.						
Joists in grain godown	10	11 6	1 6½	..	177	
Joists in measuring and packing room .	7	7 6	1 1	..	57	
			Co-efficient			
Door, large	1	4 0	2¼	7 0	63	
Door, small	1	3 0	2¼	6 6	44	
Filling door	1	2 6	2¼	2 9	15	
Ventilators	2	1 6	1	1 6	5	
Total, sq. ft. ..	..	..	..	..	..	361
Cuddapah or stone slats, 2 inches thick.						
Exterior wall, three sides	1	57 6	2 3	..	129	
Cross wall	1	10 0	1 6	..	15	
Total, sq. ft. ..	..	..	..	..	..	144
Providing two locks for main door and one for filling door.	..	..	..	..	..	Nos. 3

Abstract estimate.

Quantity.	Description of work.	Rate.	Per	Amount.	Total.
	CONSTRUCTING A RAT-PROOF GRANARY.	RS. A. P.		RS. A. P.	RS. A. P.
	TYPE-DESIGN No. 176.				
	Current Madras rates.				
397 c.ft.	Earthwork excavation for foundations ..	6 0 0	1,000 c.ft.	2 0 0	
455 ,,	Filling in basement with sand	5 0 0	100 ,,	23 0 0	
87 ,,	Filling in basement with earth	4 0 0	1,000 ,,	1 0 0	
302 ,,	Concrete broken brick in lime mortar ..	15 9 0	100 ,,	47 0 0	
429 ,,	Brick in lime mortar (foundation and basement).	20 10 0	100 ,,	88 0 0	
1,482 ,,	Brick in lime mortar (superstructure)	22 10 0	100 ,,	335 0 0	
78 r.ft.	Brick cornice work including plastering ..	0 10 0	r.ft.	49 0 0	
31 c.ft.	Cutstone slabs	2 8 0	c.ft.	78 0 0	
19·98 ,,	Timber wrought and put up	4 0 0	c.ft.	80 0 0	
35 sq.ft.	Battened door with teak frames and country wood shutters including iron fittings complete.	1 14 0	sq.ft.	66 0 0	
20 ,,	Battened door with teak frames and country wood shutters (four leaves) with 6 inches square holes and slide shutters including iron fittings complete	2 0 0	sq.ft.	40 0 0	
5 ,,	Fixed glazed ventilators with expanded metal or wire netting between shutters	1 12 0	sq.ft.	9 0 0	
182 ,,	Flooring with Cuddapah slabs 1½ inches thick over 4 inches brick jelly concrete and pointing with cement	27 10 0	100 sq.ft.	50 0 0	
18 ,,	Flooring with 5 inches concrete top rendered with cement (Colonel Ellis' patent)	8 8 0	100 ,,	2 0 0	
248 ,,	Terrace roofing with brick on edge 3 inches concrete three courses of flat tiles top and bottom lime plastered	44 1 0	100 ,,	109 0 0	
2,230 ,,	Plastering with lime mortar one coat and white washed one coat	2 1 0	100 ,,	46 0 0	
361 ,,	Wood oiling, two coats	1 2 0	100 ,,	4 0 0	
144 ,,	Cuddapah slabs, 2 inches thick	30 0 0	100 ,,	43 0 0	
3 Nos.	Providing two locks for main door and one for filling door with hasp and staple	5 0 0	each.	15 0 0	
	Total ..	..	..	1,087 0 0	
	Contingencies and petty supervision at 7½ per cent	..	..	83 0 0	
	Grand total of estimate ..	..	..	..	1,170 0 0

45)

Order—No. 271 P., dated 16th October 1919.

Recorded.

(True extract)

L. A. CAMMIADE,
Under Secretary to Government (in charge).

To the Sanitary Board.

Copy to the Sanitary Commissioner with the Government of India.
" Agent, South Indian Railway.
" " Madras and Southern Mahratta Railway.
" " Bengal-Nagpur Railway.
" Agent and Manager to His Exalted Highness the Nizam's State Railway.
" Hon'ble the Resident in Mysore,
" " the Resident at Hyderabad, } with C.L.
" Local and Municipal (Local) Department.
" " (Municipal) Department.

G. R. S. V1—G/32]

SUBJECT.. .....

.....

.....

Diary No. of letter replied to 1329

GENERAL AND REVENUE SECRETARIAT

( )

, *the* 191 .

Date of issue 24/1

Signed by M Dcs

Section Sanys.

File No. 62-19

Serial No. 2

No. 17053(1)

To

The Offg Sanitary Commissioner

Sir.

I am directed to forward ~~the~~ of privies
herewith for favour of approval
& return a copy of G.O. No.
271-P.H. dt 16.10.19 issued by the
Govt of Madras, Local & Munici-
pal dept re type designs for
rat proof latrines. ~~I am also~~
~~to enquire~~

I have the

over.

Dcs

19/1/20.

for Chief Secy to Govt

Department of Public Health in Mysore.

OFFICE OF THE SANITARY COMMISSIONER
WITH THE GOVT. OF MYSORE.

Bangalore, Dated the 12th February 1920

No. G.C 227-2
Enc. one

15059.

19 [illegible]
SECTION
FILE No.
SERIAL 863

From

A. K. PANI, ESQ., D.P.H., etc.
Offg. Sanitary Commissioner with the Government of
H. H. the Maharaja of Mysore, BANGALORE.

To

C. S. Balasundram Iyer Esq., B.A.,
Chief Secretary to Government,
B a n g a l o r e.

Sir,

With reference to your No. G. 17053/Sany. 62-19-2 da ted the 24th January 1920 forwarding for opinion copy of Government Order issued by the Government of Madras regard ing type designs for rat proof granaries, I have the honor to state that copies of type designs may be forwarded to all Municipal Councils for infomation; The designs indicate the lines on which bye-laws have to be framed for adoption in Municipalities, to regulate the construction of buildings where large quantities are expected to be stored.

I have the honor to be,

Sir,

Your most obedient servant.

Offg. Sanitary Commissioner.

wc

From The Offg. Sanitary Commissioner
in Mysore, Bangalore.

21329

To The Chief Secretary to Govt.
Bangalore

Dated 12. 2. 20.

Despatched

Received 13 FEB 1920

General No. G. C. 227-2

No.

Enclosure No. 1

Returning with opinion
copy of two medals
good-wish re type designs
for Sat. Brooch proposed

To Mint 13-2-20
A—3½

PRINTED AT THE
14 FEB 1920

G. R. S. VI—G/32]

SUBJECT.....

.....

.....

Diary No. of letter replied to.....

GENERAL AND REVENUE SECRETARIAT

, the *191*

Date of issue 8/12/20

Signed by for Dep. Sec.

Section Secret

File No. 62-9

Serial No. 4

No. G20/23/Vol.ie

To

The Secretary Govt. Printing

Sir,

I am directed to forward herewith a copy of G.O. No. 271 P. 16th Oct 1919 of the Govt of Madras regarding type-designs for ~~flood~~ rat-proof granaries and to request you to cause 3000 (no to be read) copies of the same to be printed and forwarded to this Office as early as possible

over.

I have etc

2. The tracings of the details will be forwarded to you by the Chief Engineer.

(details tracings which will be forwarded to you by the Chief Engineer)

17/12/20

C.D.O. for Chief Secy

19)

G20724/Pubs 3 07 6/3/20

Copy forwarded to the Chief Engineer
with
for causing the ~~tracings~~ drawings to be
traced and forwarded to
the Supt. Govt Printing early.

B.O.

2cs 10/3/20
Per Capt Hy

3 v

6/3/20 B.O.

16p

List of enclosures.

Copied by

Examined by

WD 1744—GPB—30,000—19-3-19

TELEGRAPHIC ADDRESS
Mysorepworks.

18455

No. D. 10549

MYSORE P. W. DEPARTMENT.

CENTRAL OFFICE.

Bangalore 15th April 1920

27174.

From

S. CADAMBI, Esq.,

Chief Engineer of Mysore,

Bangalore.

To

C. S. Balasundaram Iyer, Esq., B.A.,

Chief Secretary to Government of Mysore,

B A N G A L O R E.

Sir,

With reference to your letter No.G.20724/Sany. dated the 8th March 1920, I have the honour to return herewith the type design for rat proof granaries after sending copies of the same to the Superintendent, Government Printing, for getting them printed.

I have the honour to be

Sir,

Your most obedient servant,

R V Sundaramma

Deputy Chief Engineer of Mysore.

J.R.1st.

WD 1779—GPB—500—11-3-20

MYSORE P. W. DEPARTMENT.

No.

From

THE CHIEF ENGINEER OF MYSORE,

Bangalore.

To

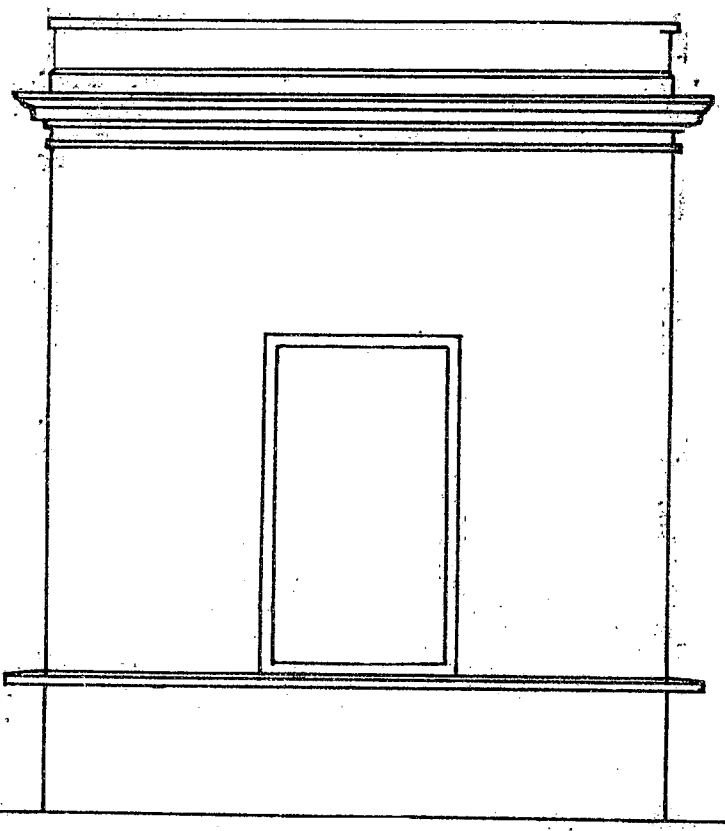
Dated Bangalore

Despatched

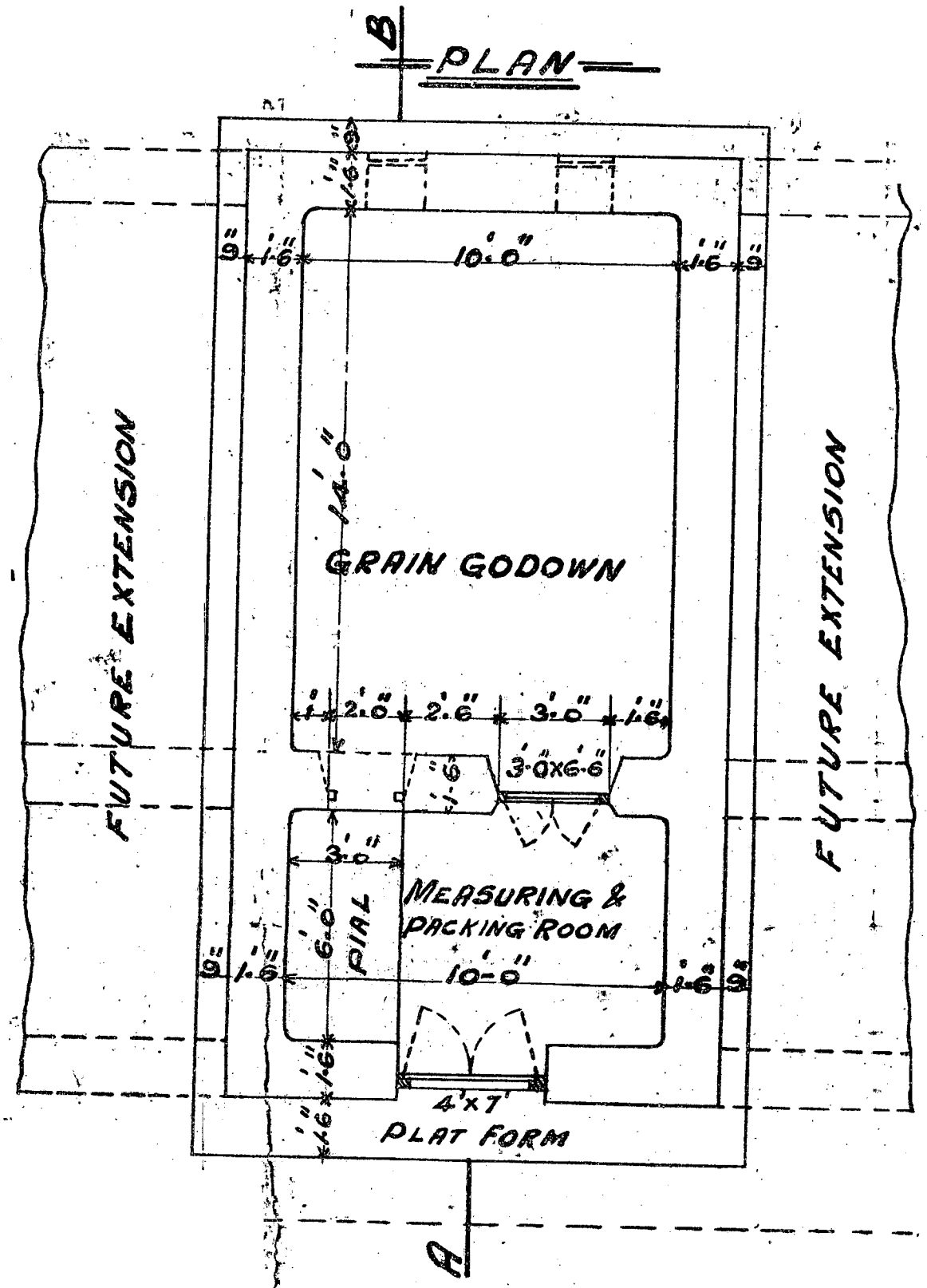
Enclosure No.

SUBJECT.

FRONT ELEVATION



PLAN



TO BE OF FERRO CON
IF GRANITE STONE
AVAILABLE

G

OFFICE OF SANITARY ENGINEER TO GOVT;
CHEPAUK. MADRAS.

Reg. No. 352
Copies. 800 + 95

NOTE:—Reprod
the S

[SAN No. 62 OF 1919.]

SANITARY BOARD TYPE DESIGN No. 176

FOR A

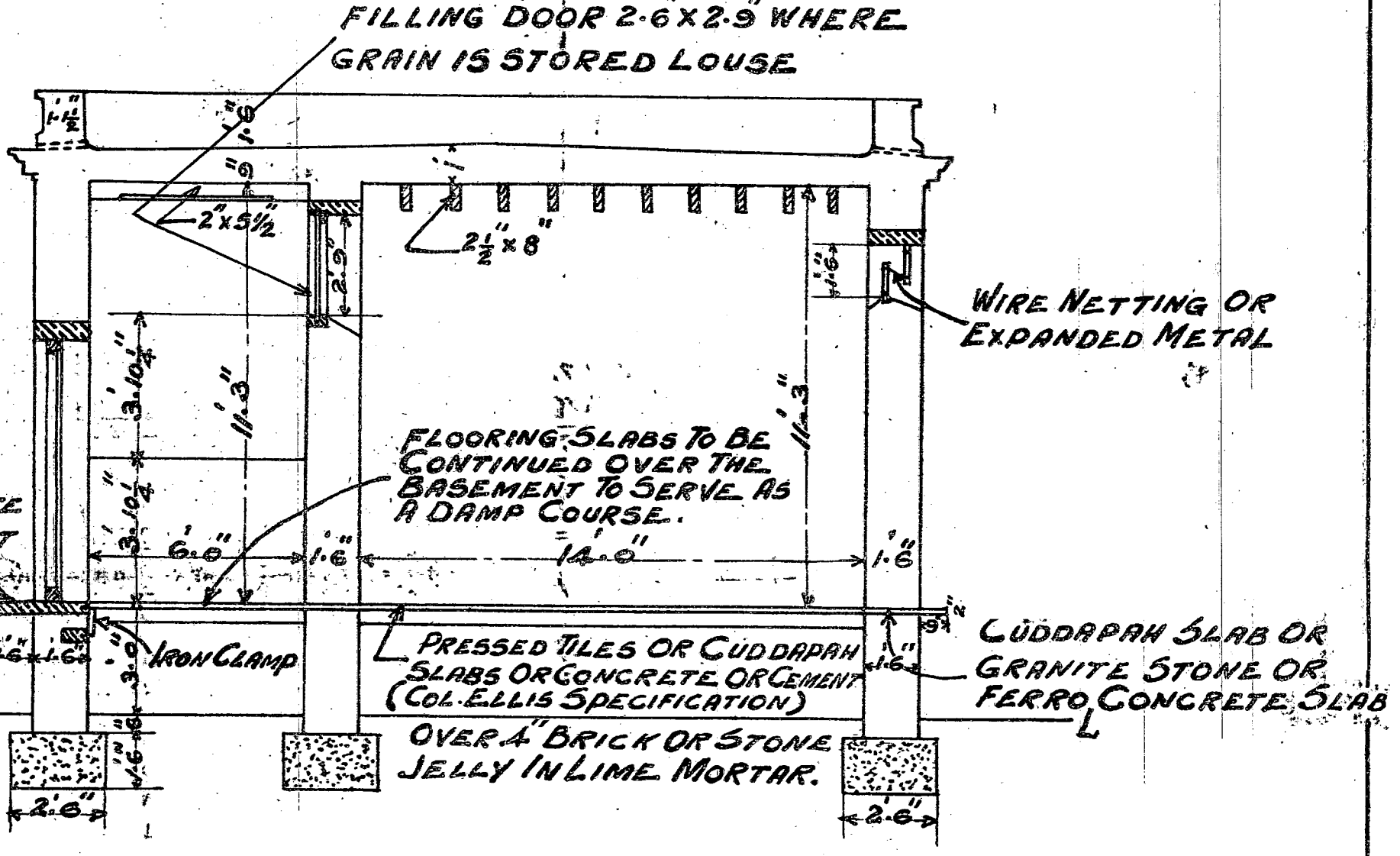
RAT-PROOF GRAIN GODOWN

SCALE 1" = 4'

ED WITH PROCEEDINGS No. 406/5 DATED 10-9-19.

(SHEET No. 1)

SECTION ON A.B.


FILLING DOOR 2'-6" X 2'-9" WHERE GRAIN IS STORED LOUSE
1'-6"
1'-0"
2" x 5½"
2½" x 8"
2'-9"
WIRE NETTING OR EXPANDED METAL
FLOORING SLABS TO BE CONTINUED OVER THE BASEMENT TO SERVE AS A DAMP COURSE.
11'-3"
3'-10½"
6'-0"
1'-6"
14'-0"
IRON CLAMP
3'-0"
PRESSED TILES OR CUDDAPAH SLABS OR CONCRETE OR CEMENT (COL. ELLIS SPECIFICATION) OVER 4" BRICK OR STONE JELLY IN LIME MORTAR.
CUDDAPAH SLAB OR GRANITE STONE OR FERRO CONCRETE SLAB
2'-6"

(TRUE COPY)

(Sd.) C. Peddie
3.9.19
SECRETARY, SANITARY BOARD.

(SD.) R. F. STONEY,
7-10-19.
SANITARY ENGINEER TO GOVT.

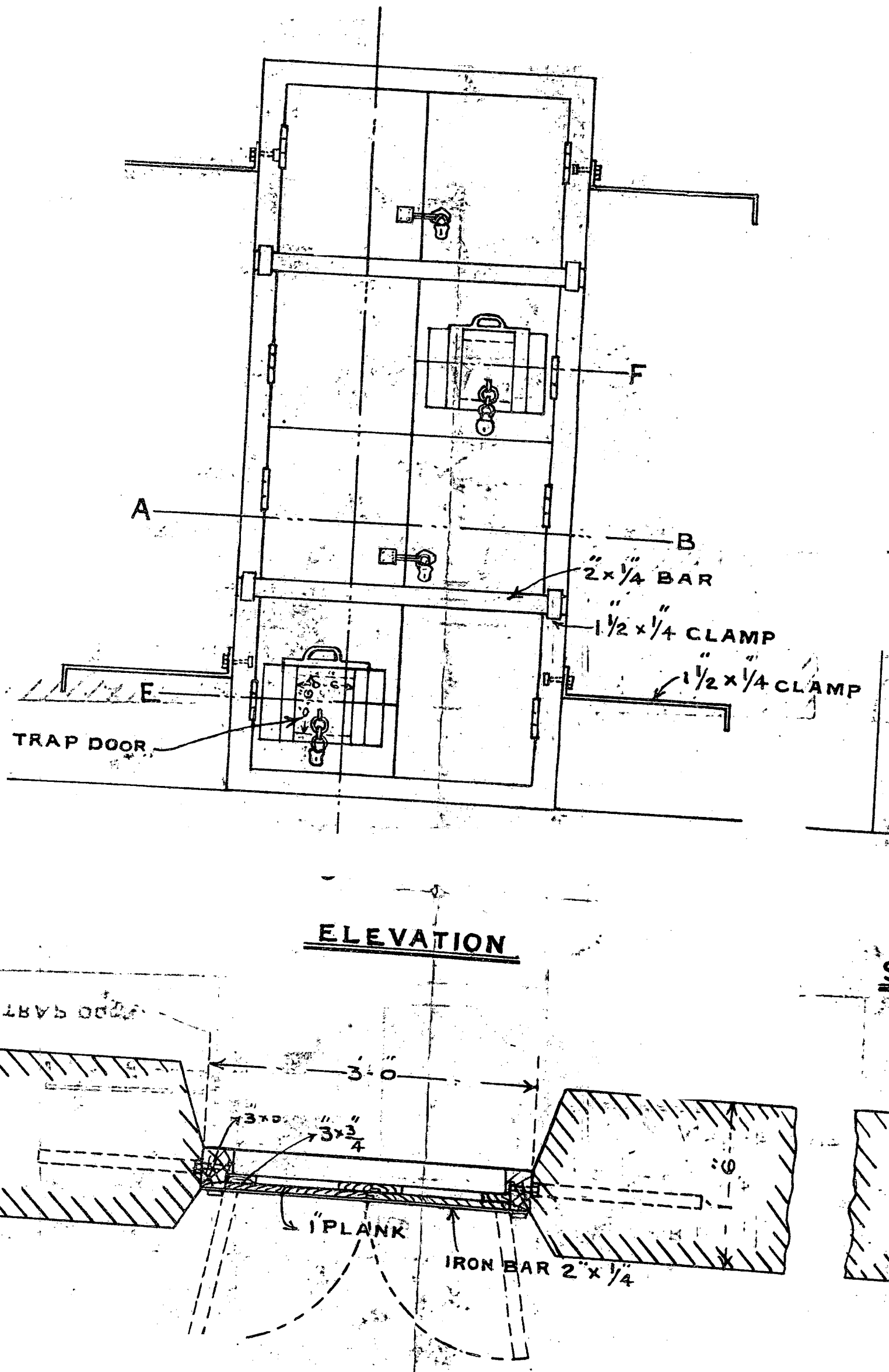
ced from original received from
cretary, Sanitary Board, Madras.

Vandyke., Survey Office, Madras.
1919

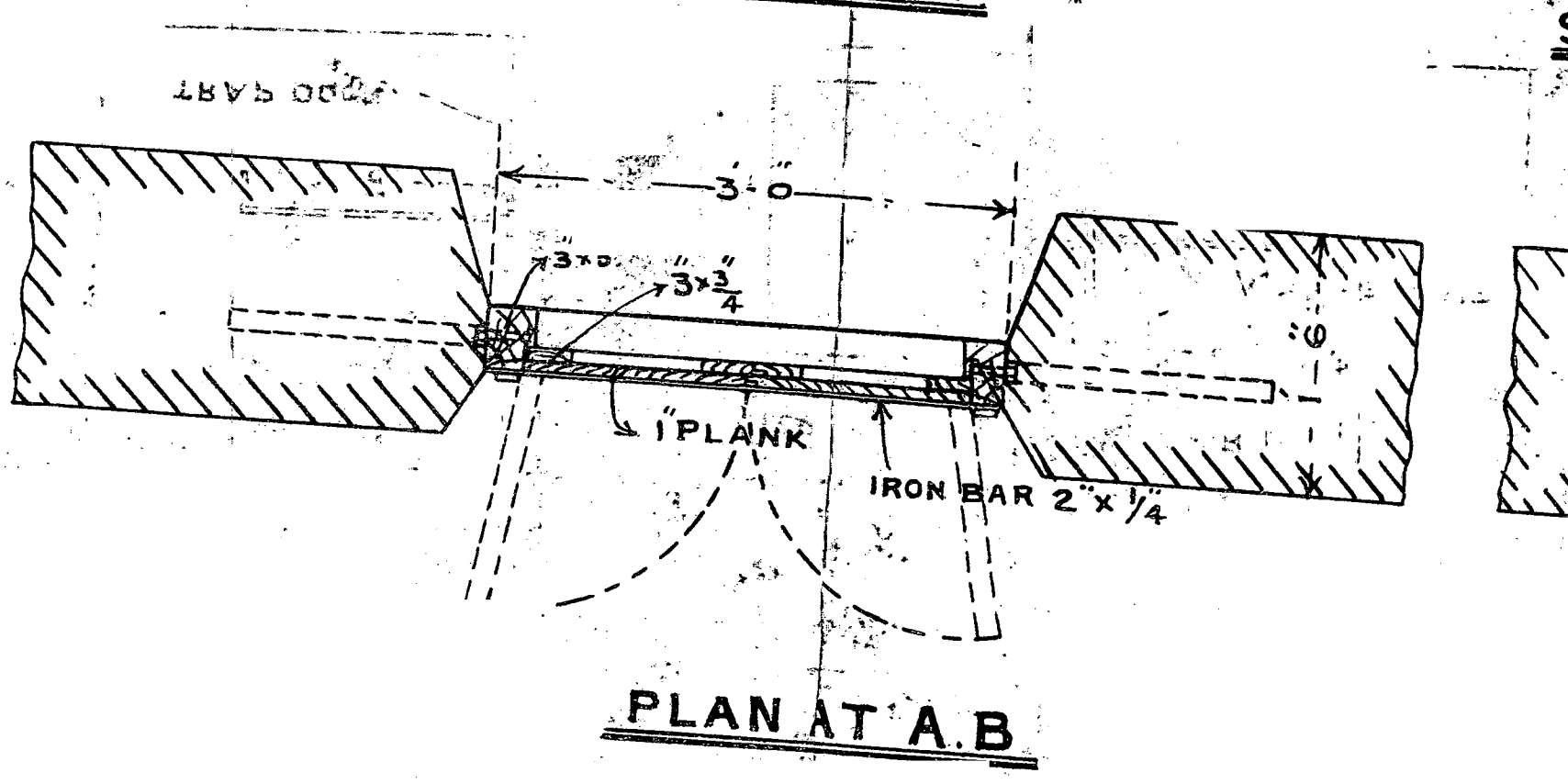
SHEET

DETAIL DRAWING F

IN RAT



ELEVATION



PLAN AT A.B

OFFICE OF SANITARY ENGINEER
CHEPAUK MADRAS

24-9-12

Reg. No. 352
a
Copies 800+95

(Sb
SE
SAN

NOTE:—Reproduced from original received fro
the Secretary, Sanitary Board, Madras

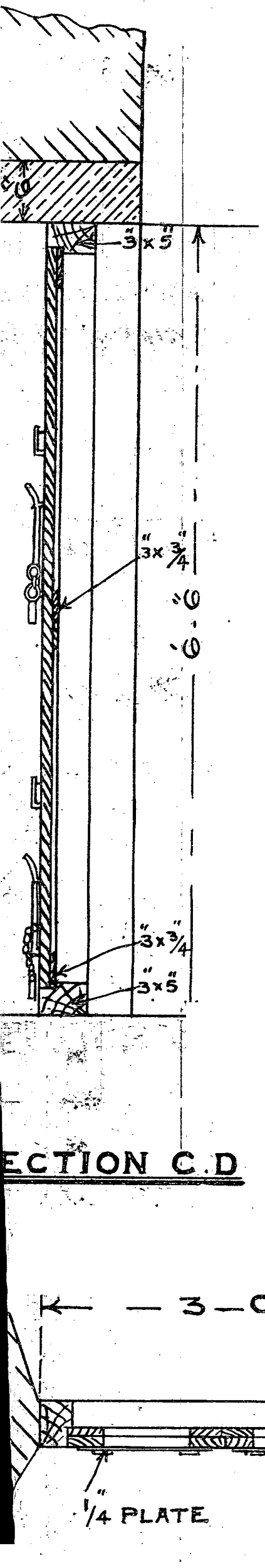
2 OF TYPE DESIGN Nº 176.

[SAN Nº 63 OF 1919]

R DOOR & VENTILATOR

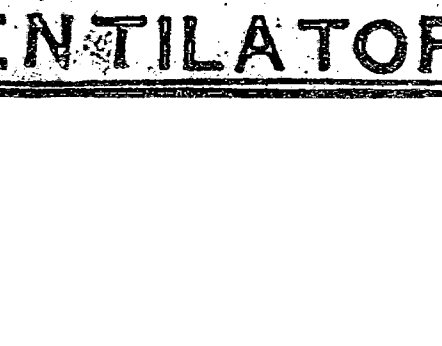
OOF GRANERY

ALE 1"=1FT.



FIXED GLAZED VENTILATOR

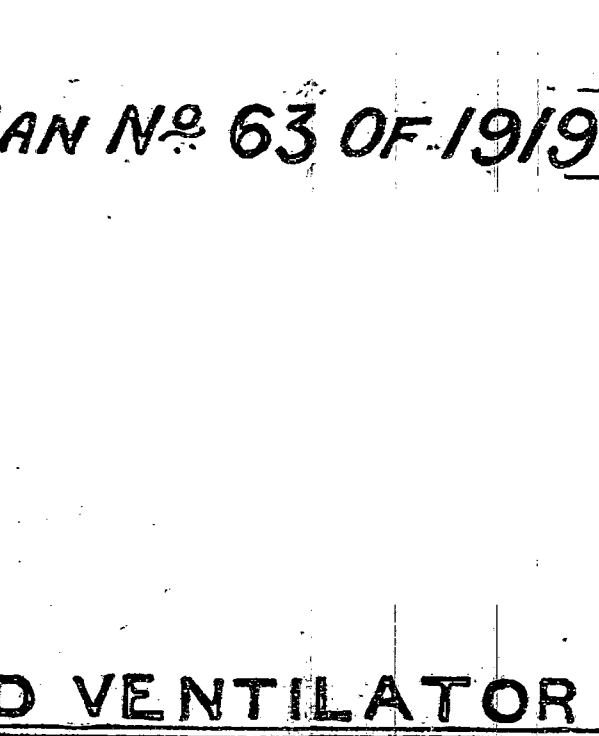
SIZE 1'-6" x 1'-6"



OUT SIDE

WIRE NETTING OR EXPANDED METAL

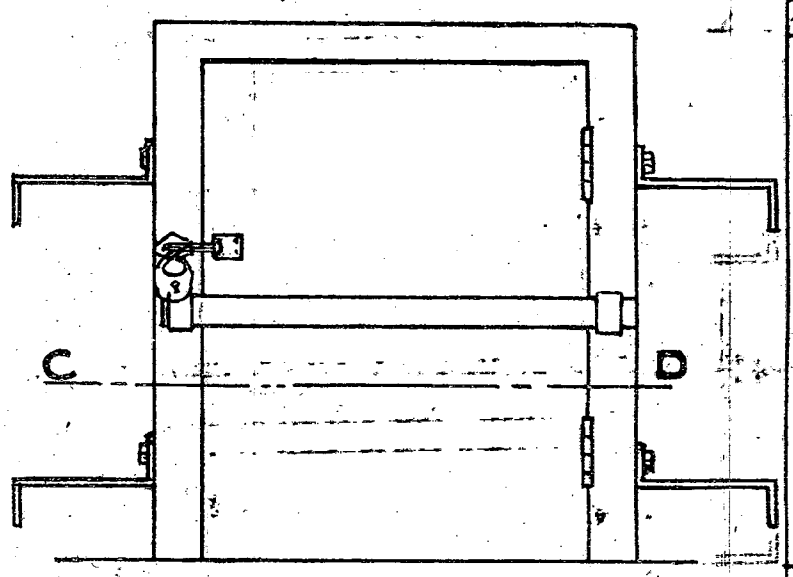
ELEVATION



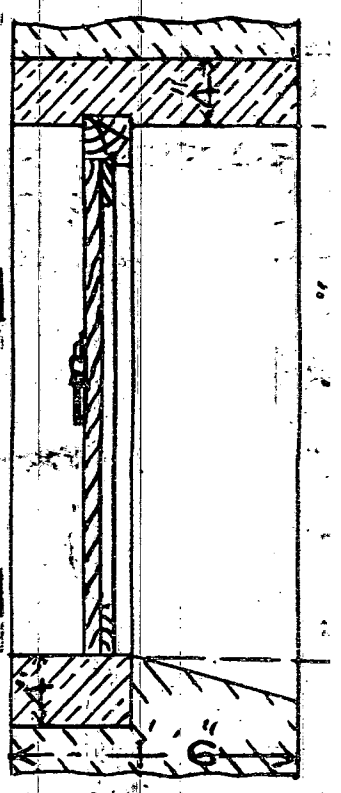
SECTION

FILLING DOOR

2½' x 2¾'

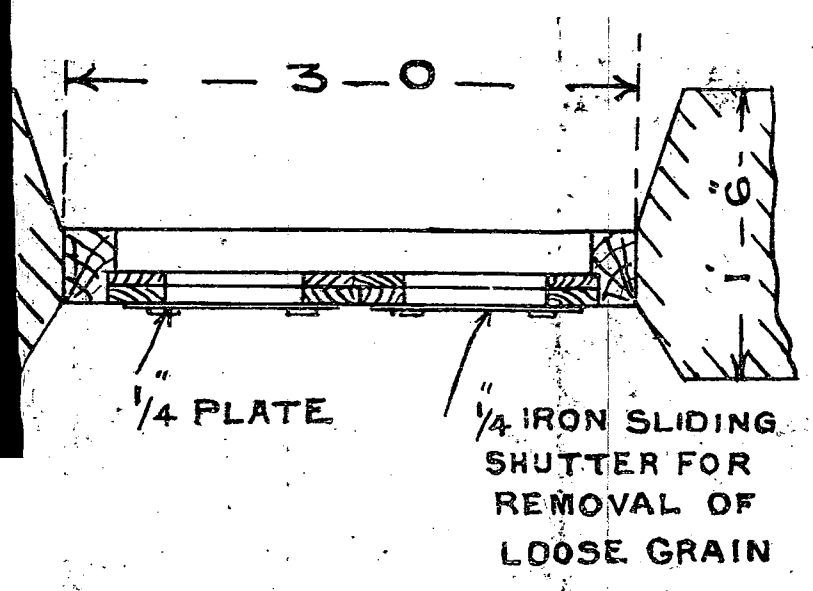


ELEVATION

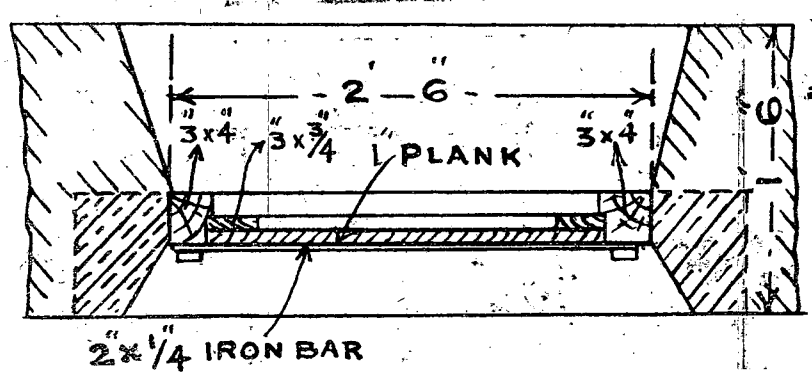


SECTION

ECTION C.D



PLAN AT E.F



PLAN AT C.D

(TRUE COPY)

(SD.) R. F. STONEY,
7-10-19.

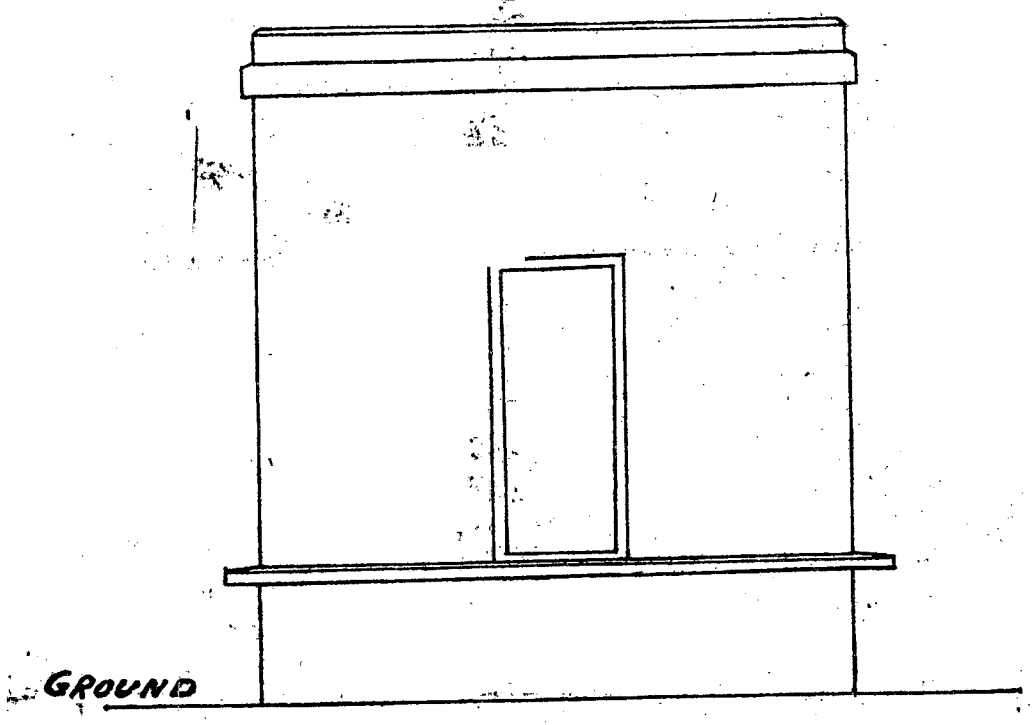
SANITARY ENGINEER TO GOVT.

C. Peddie,
3.9.19
CRETARY,
ITARY BOARD.

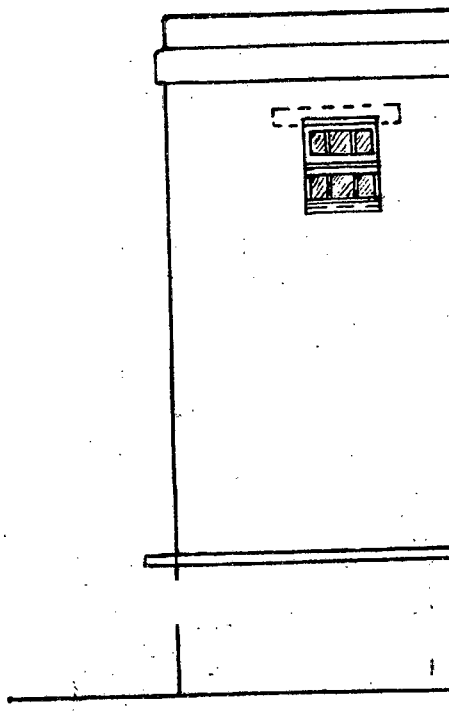
Vandyke., Survey Office, Madras.
1919

SANITARY BOARD T

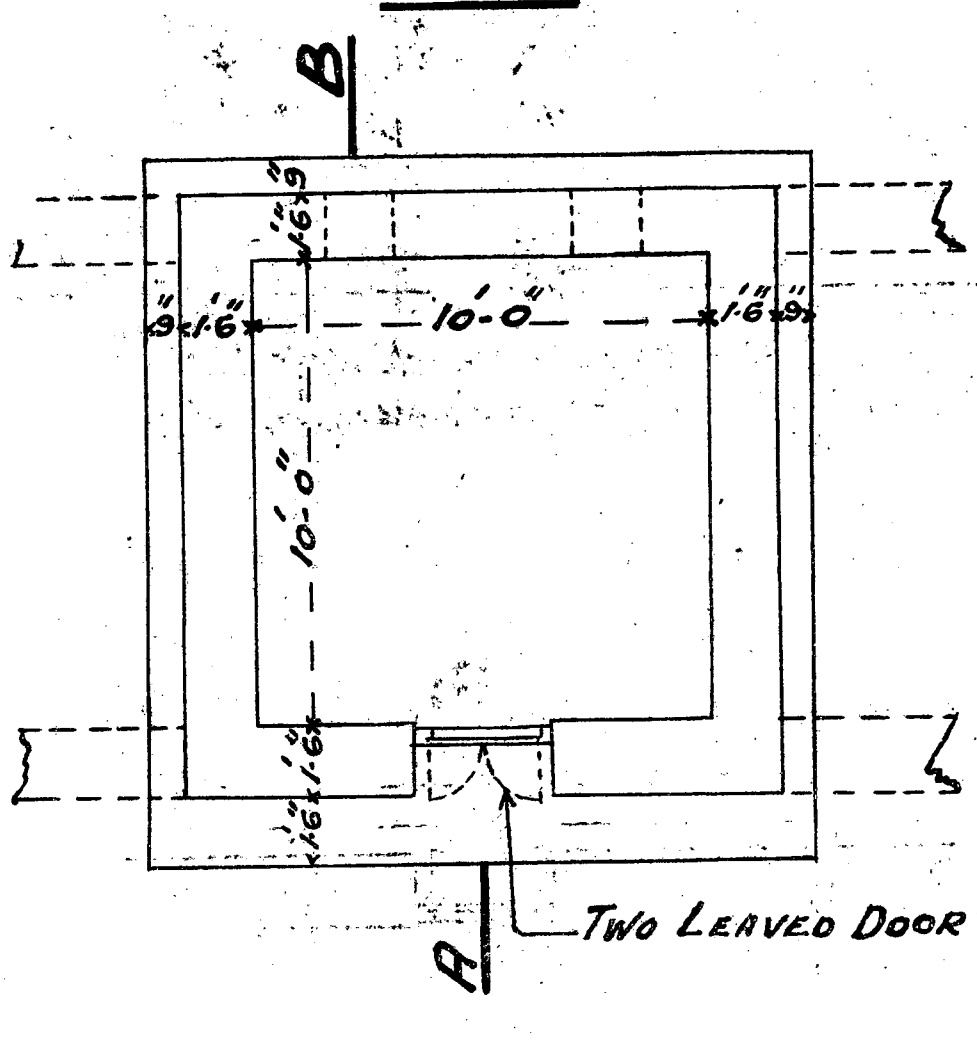
FRONT ELEVATION



REAR E



PLAN



SANITAR

R

ISSUED

OFFICE OF SANITARY ENGINEER TO GOVT;
CHEPAUK. MADRAS

18.3.19

SECR

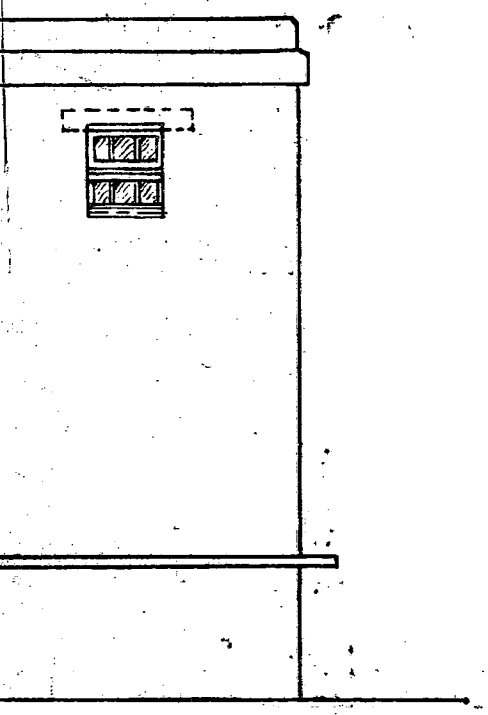
eg. No. 351
pies 800+95

NOTE:—Reproduc
the Sec

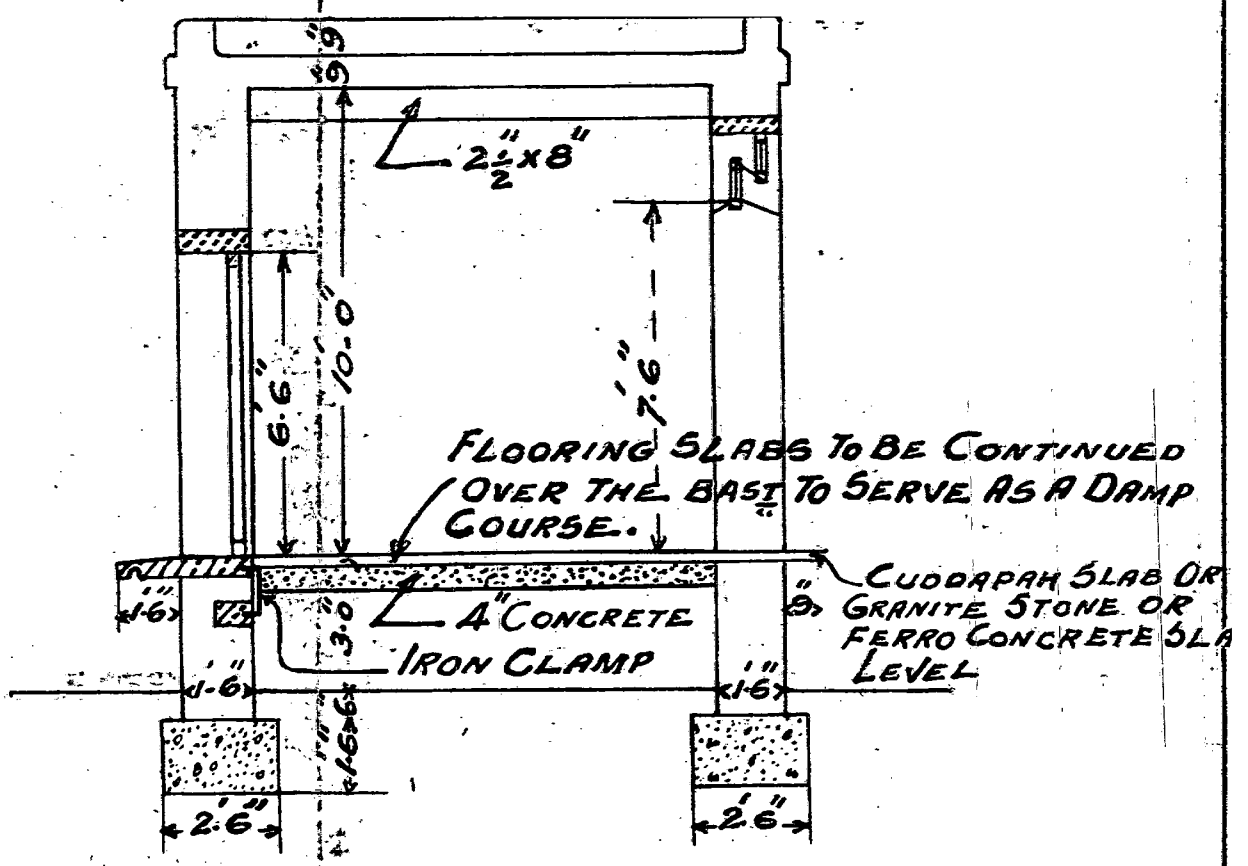
[SAN No. 61 OF 1919.]

YPE DESIGN No. 175

EVATION



SECTION ON A.B.



Y BOARD TYPE DESIGN No. 175.

FOR

AT-PROOF GODOWN

FOR

STORING GRAINS

SCALE 1=5

ITH PROCEEDINGS No. 406/5 DATED 10.9.19.

(TRUE COPY)

(Sd.) C. Peddie.
3.9.19
TARY. SANITARY BOARD

(SD.) R. F. STONEY,
7-10-19.
SANITARY ENGINEER TO GOVT;

l from original received from
tary, Sanitary Board, Madras.

Vandyke., Survey Office, Madras.
1919

THE SUPERINTEND... 7527 21-4-20. ...VERNME...

DIARY No. 963/1
19 - 19
SECTION
FILE No.
SERIAL No.

G. R. S. 46

GOVERNMENT OF HIS HIGHNESS THE MAHARAJA OF MYSORE.
GENERAL AND REVENUE SECRETARIAT.

No. , dated the 26/4/1920.

(Surveys)

To

The Superintending
Govt Printing
Bangalore.

SUBJECT

Re the printing of type designs for the construction of rat proof granaries.

SIR,

I am directed to invite attention to the marginally noted communication and to request that the Government of His Highness the Maharaja may be informed, in the column opposite, of the cause of delay in furnishing a reply and of the approximate date on which reply may be expected.

I am also to request that the reply to this reminder may be sent ~~not later than the~~ at an early date

I have, etc.,

Dy Secretary

for Chief Secretary to Govt

* Previous reminders.

REPLY

No. 2722 dated the 26th 1920.

Ch Secs 29225 28 APR 1920 SECRETARIAT 111
CHIEF SECRETARY'S PROTECTION BRANCH 29 APR 1920

To

The Secretary to the Government of H. H. the Maharaja of Mysore, General and Revenue Dept.

Sir

I have the honour to inform you that the printed copies of the type-designs of rat proof granaries are ready and that the sketches for same are being done by the draughtsmen of this Office, and as soon as they are ready, the same will be sent by your Office.

I have, etc.,

Supt, Govt Press

WD 1744—10,000—GPB—19-3-19

Pms
Bg 21/4 P.R. 5000 25/2/20

DIARY No. 3415

Agri 62-19-6

MYSORE PUBLIC WORKS SYSTEM,
SECTION
Central Office,
Dated, Bangalore, 26 August 1920.

No. D. 2203

En 600 Cyclos
Sent Separately

From

S. Cadambi, Esquire,

Chief Engineer of Mysore,

Bangalore.

DEPT. OF AGRI.
Ch Secy
30 AUG 1920

To

C. S. Balasundaram Iyer, Esq., B.A.,

Chief Secretary to the Government of

Mysore, Bangalore.

Sam
30/8/20
4-10 pm

TYPE DESIGN NOS. 175 & 176 WITH DETAIL DRAWINGS OF DOORS AND --- VENTILATORS FOR No.176, ISSUED BY THE MADRAS SANITARY BOARD FOR CONSTRUCTING RAT-PROOF GRANARIES IN THE STATE.

==========

Sir,

With reference to the correspondence ending with this office letter No.10549 dated 1st April 1920, I have the honour to forward 200 copies in each of the above three designs.

2. 100 copies in each design have been retained in this office for distribution in the Department.

I have the honour to be,

Sir,

Your most obedient Servant,

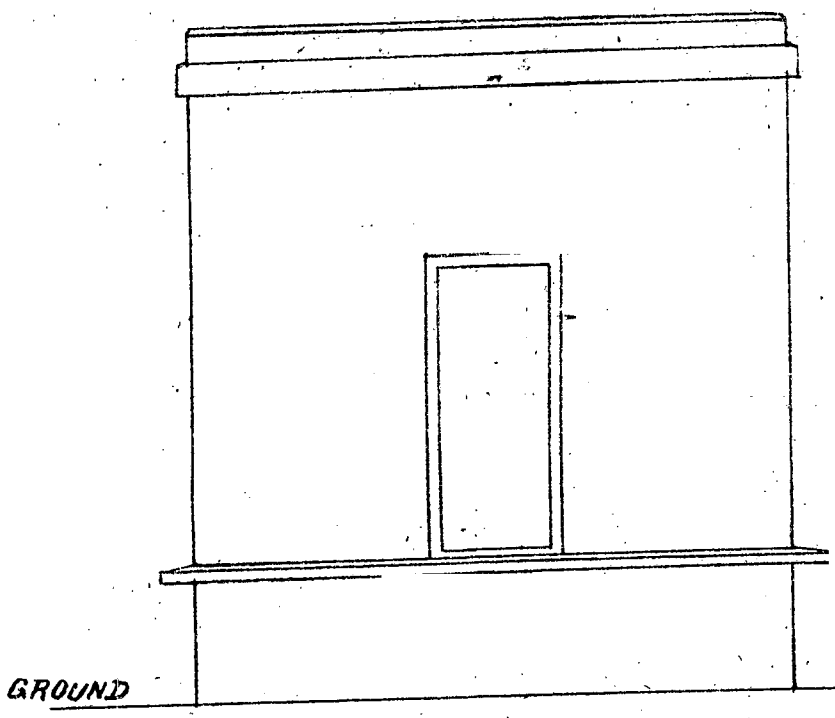
R Sundaramma

Deputy Chief Engineer of Mysore.

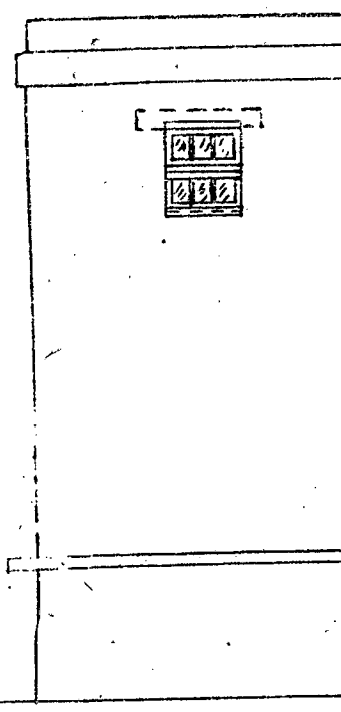
A.N./25-8.

SANITARY BOARD TY

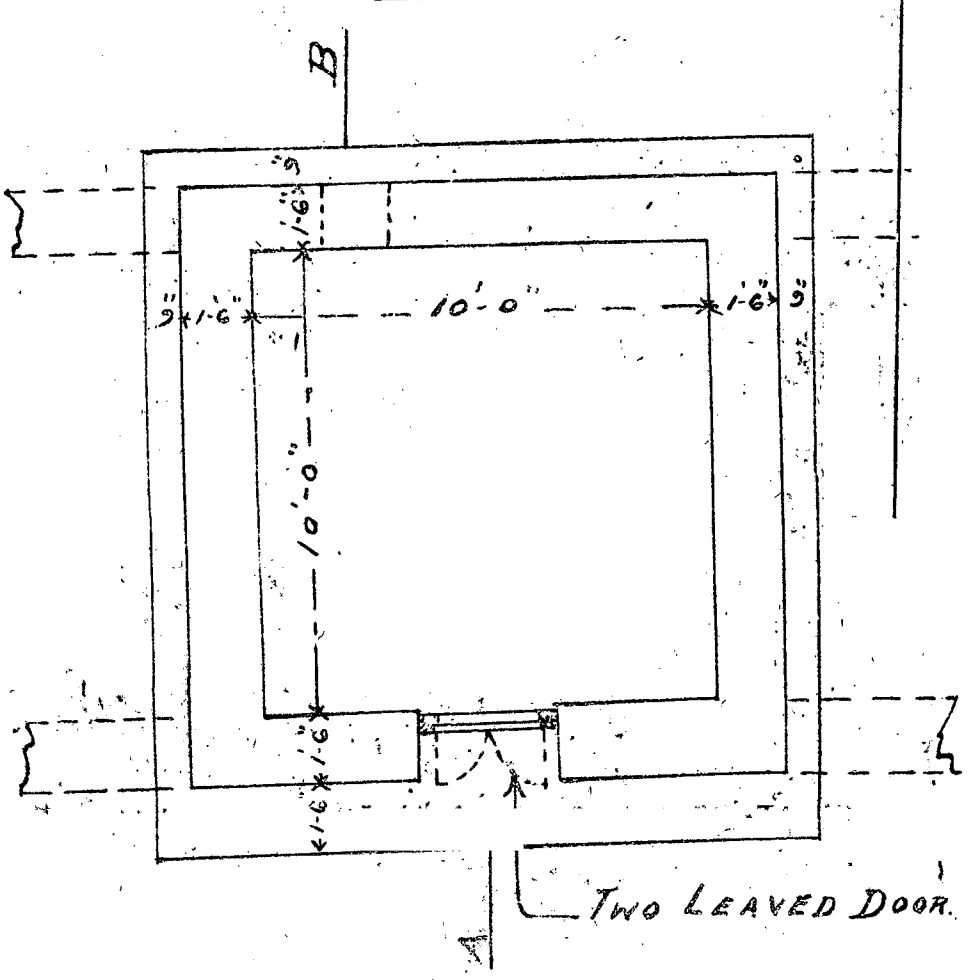
— FRONT ELEVATION —



— REAR EL



— PLAN —



— SANITAR

— R

ISSUED W

(

SECRE

office of SANITARY ENGINEER TO GOVT;
CHEPAUK. MADRAS.

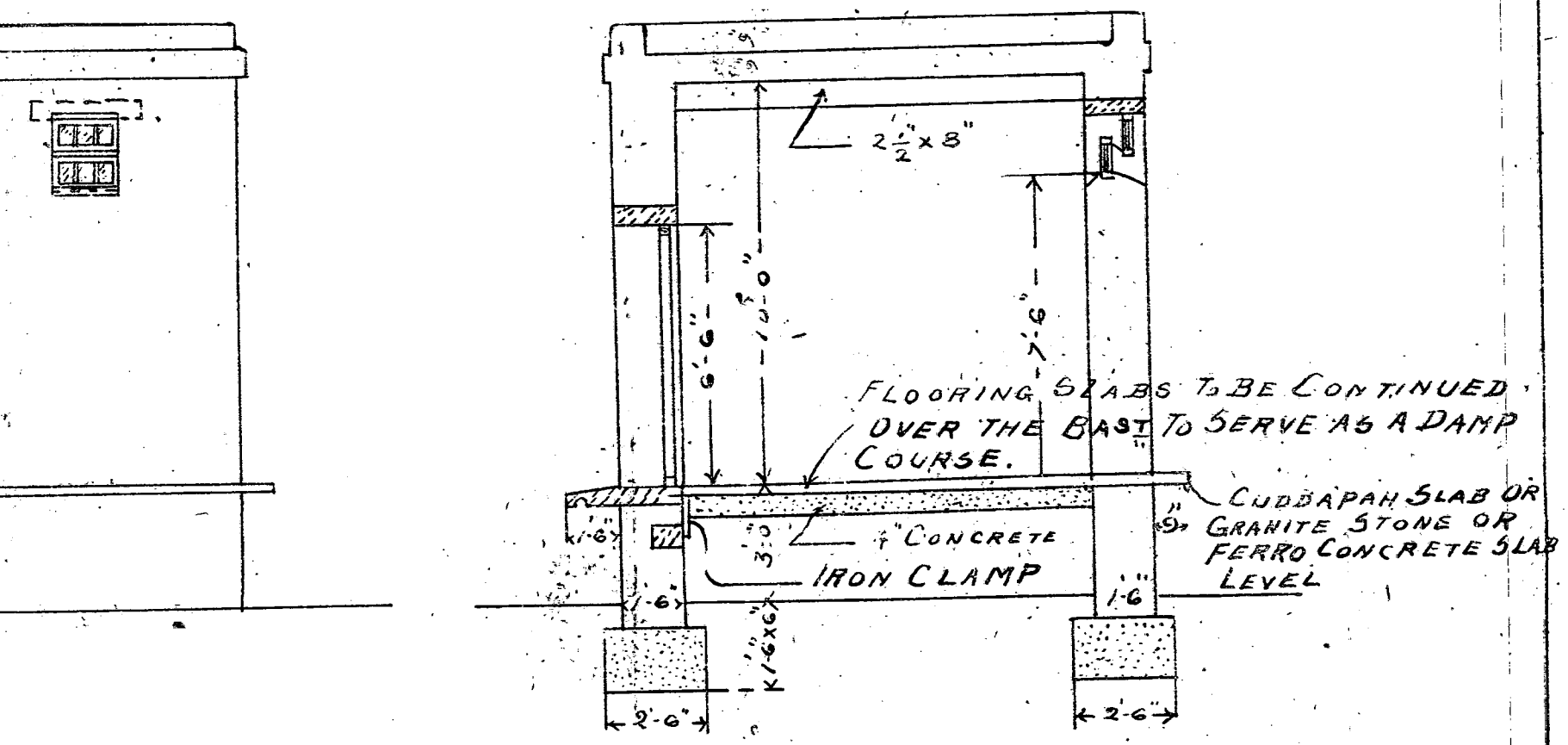
Central office Bangalore D/. 31-3-20.

[SAN No. 61 OF 1919.]

PE DESIGN No. 175

EVATION —

— SECTION. ON. A. B. —



BOARD TYPE DESIGN No. 175.

— FOR —

T-PROOF GODOWN —

FOR —

STORING GRAINS —

— SCALE 1"=5' —

TH PROCEEDINGS No. 406/5 DATED 10.9.19.

(TRUE COPY)

Sd.) C. Peddie
3-9-19
TARY. SANITARY BOARD

(SD.) R. F. STONEY.
7-10-19.
SANITARY ENGINEER TO GOVT.

[SAN No. 62 OF 1919.]

VITARY BOARD TYPE DESIGN No. 176

FOR A

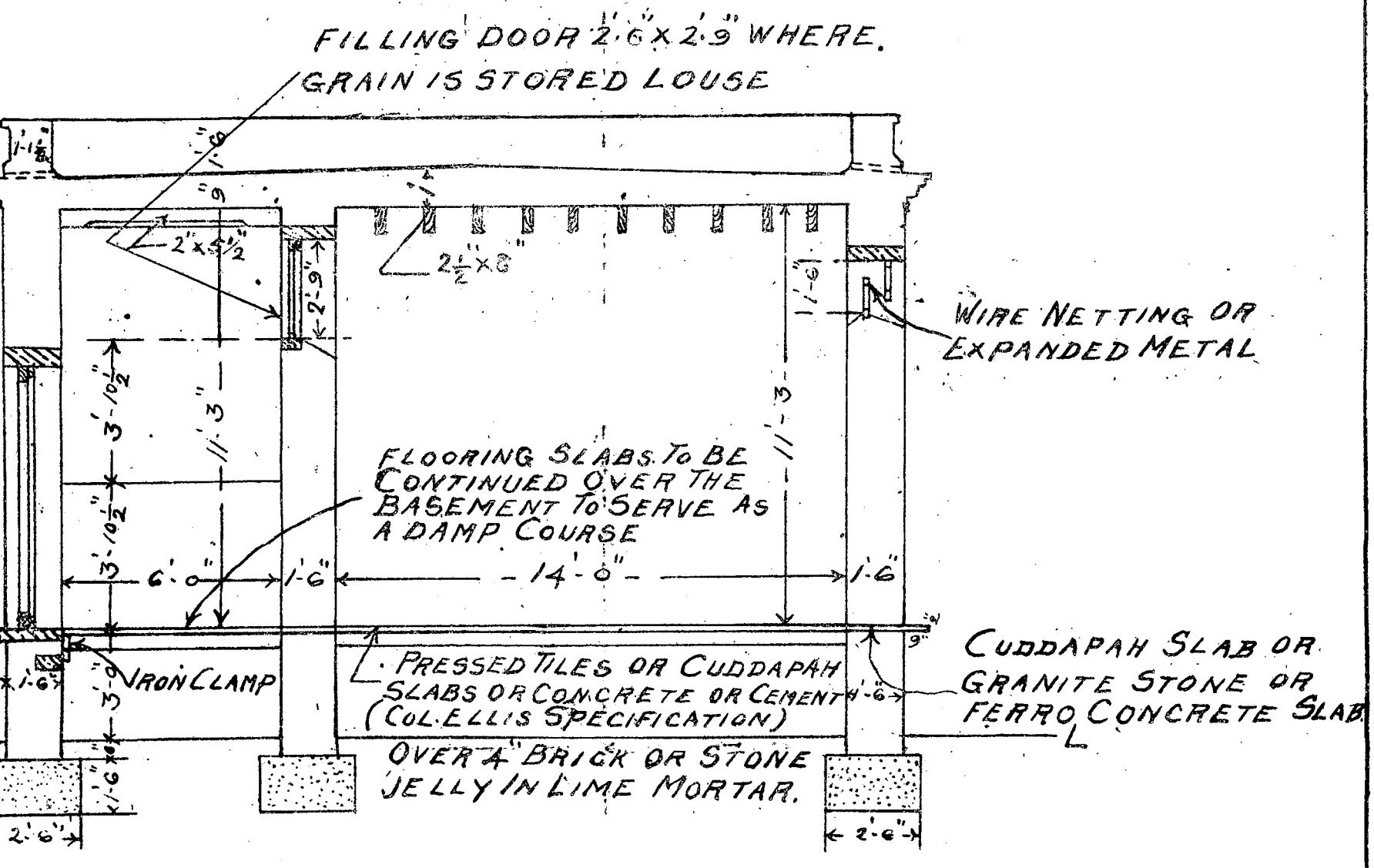
RAT-PROOF GRAIN GODOWN

SCALE 1" = 4'

WITH PROCEEDINGS No. 406/5 DATED 10-9-19.

(SHEET No. 1)

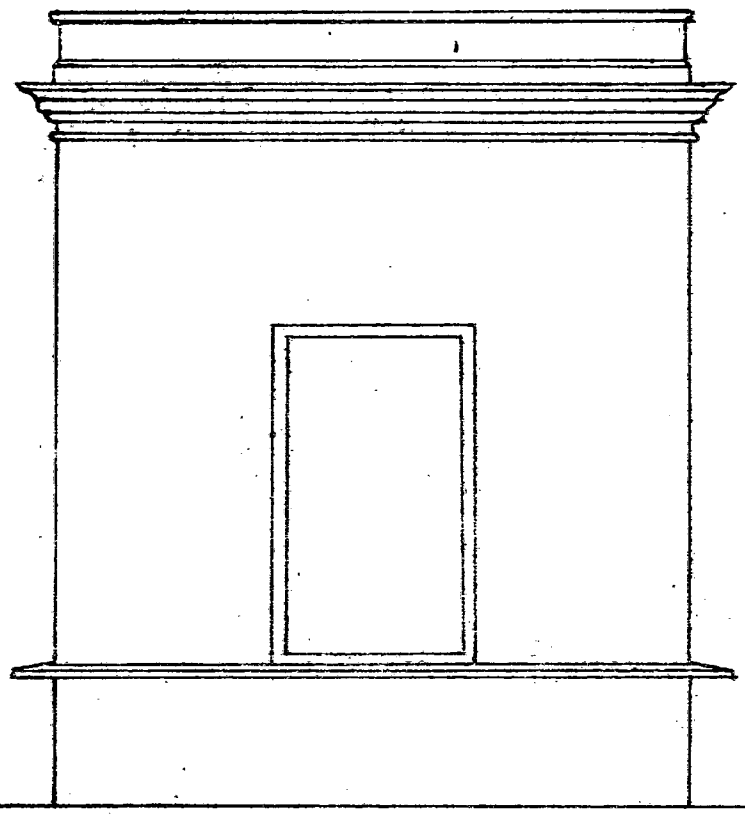
SECTION ON A.B.


FILLING DOOR 2'-6" X 2'-9" WHERE GRAIN IS STORED LOUSE
2" x 5½"
2'-9"
2½" x 8"
1'-9"
WIRE NETTING OR EXPANDED METAL
3'-10½"
11'-3"
FLOORING SLABS TO BE CONTINUED OVER THE BASEMENT TO SERVE AS A DAMP COURSE
6'-0"
1'-6"
14'-0"
1'-6"
IRON CLAMP
PRESSED TILES OR CUDDAPAH SLABS OR CONCRETE OR CEMENT (COL. ELLIS SPECIFICATION)
OVER 4" BRICK OR STONE JELLY IN LIME MORTAR.
CUDDAPAH SLAB OR GRANITE STONE OR FERRO CONCRETE SLAB
4'-6"
2'-6"

(Sd) C. Peddie
3-9-19
SECRETARY, SANITARY BOARD.

(SD.) R. F. STONEY,
7-10-19.
SANITARY ENGINEER TO GOVT.

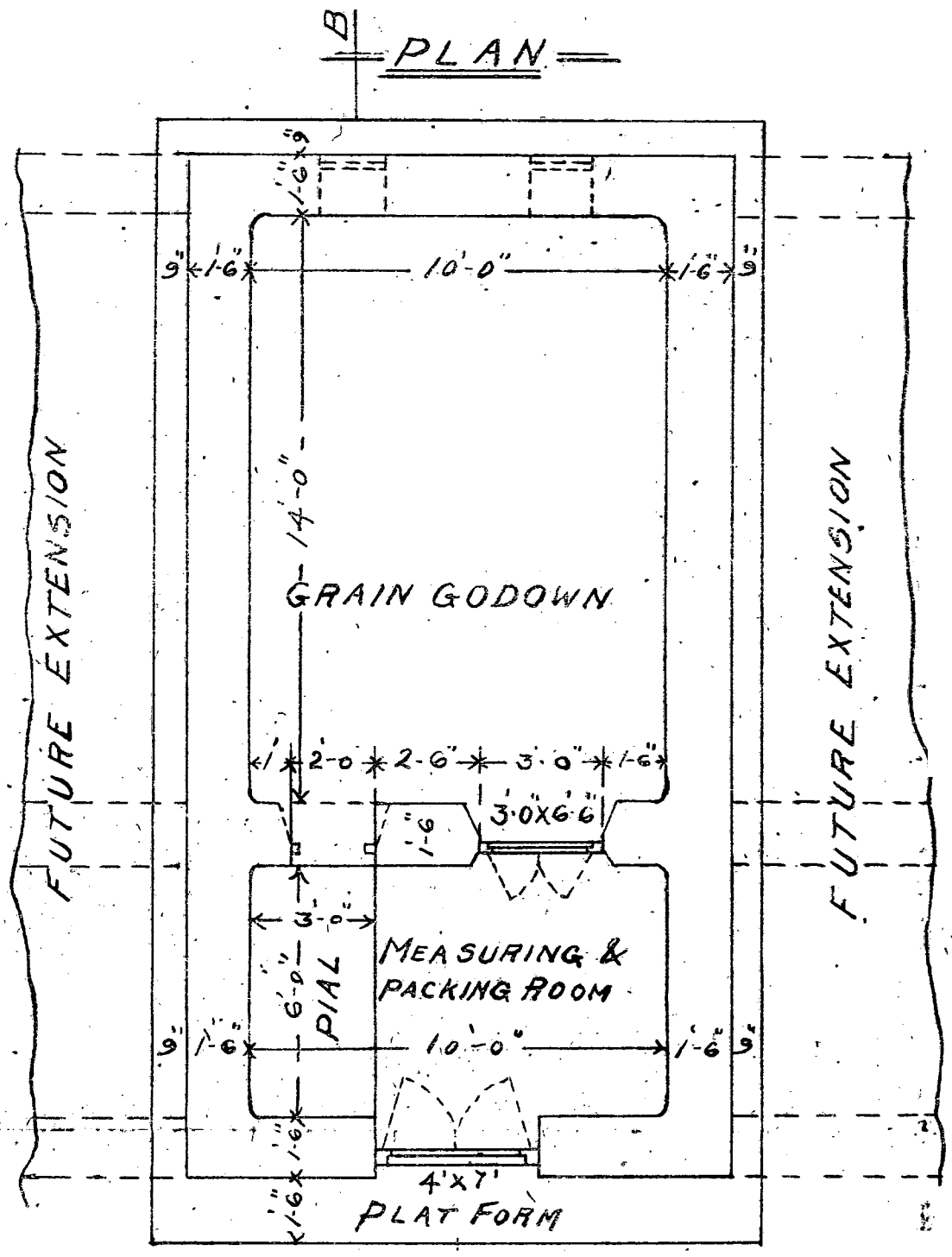
FRONT ELEVATION



SA

ISSUED

B PLAN



TO BE OF FERRO CONCRETE
IF GRANITE STONE NOT
AVAILABLE-

OFFICE OF SANITARY ENGINEER TO GOVT;
CHEPAUK. MADRAS.

Central office Bangalore D/. 31-3-20.

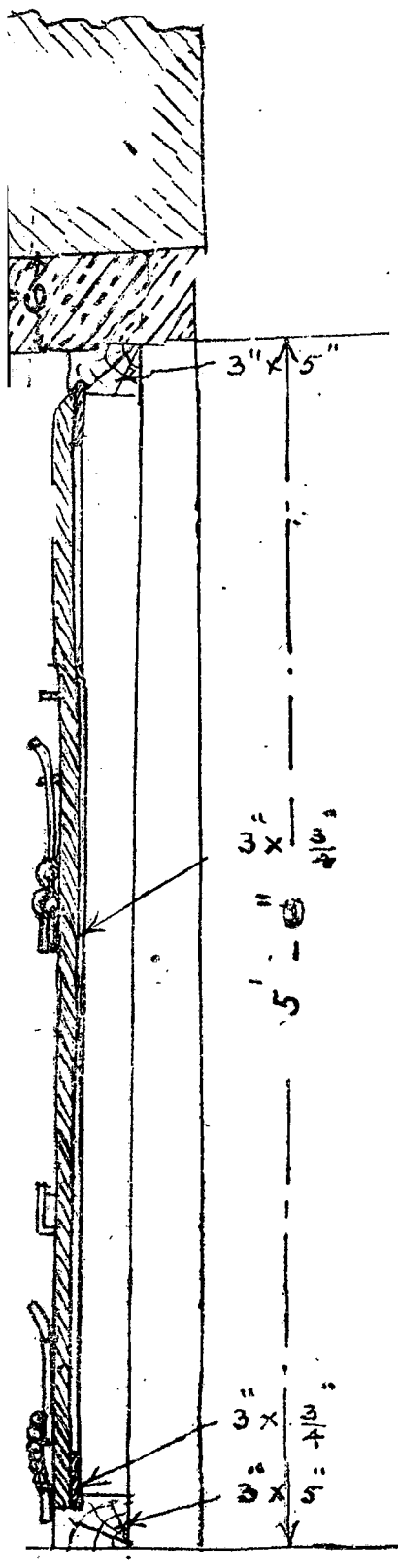
DESIGN No. 176

DOOR & VENTILATOR

OF GRANERY

1"-1 Ft.

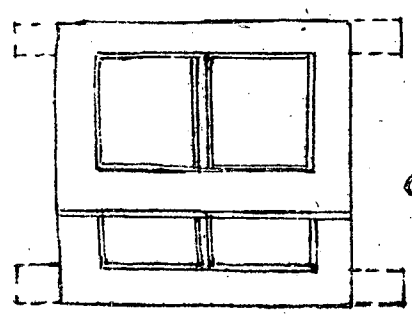
SAN No. 63 OF 1919



SECTION C.D.

FIXED GLAZED VENTILATOR

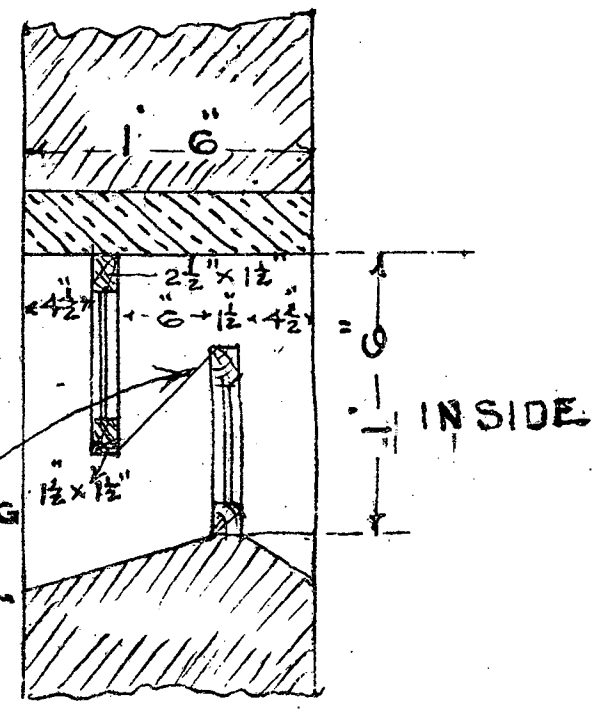
SIZE 1'-6" X 1'-6".



OUTSIDE

WIRE NETTING OR EXPANDED METAL

INSIDE

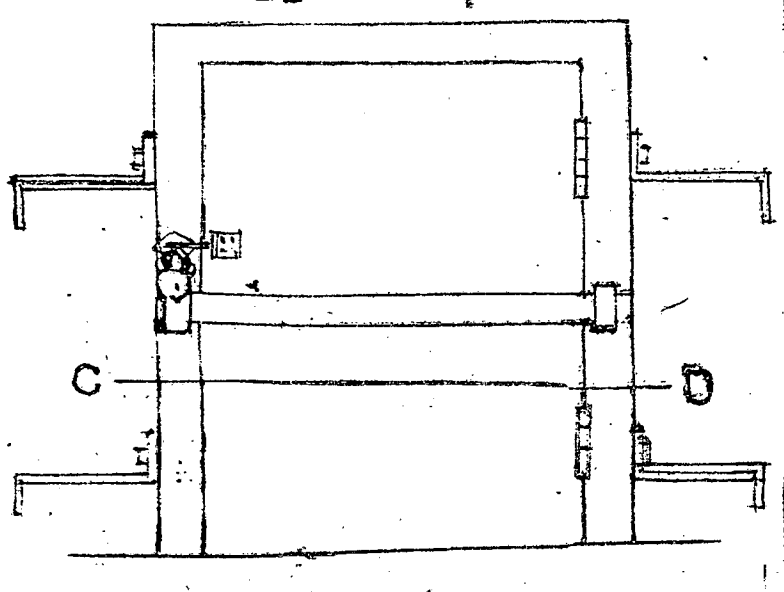


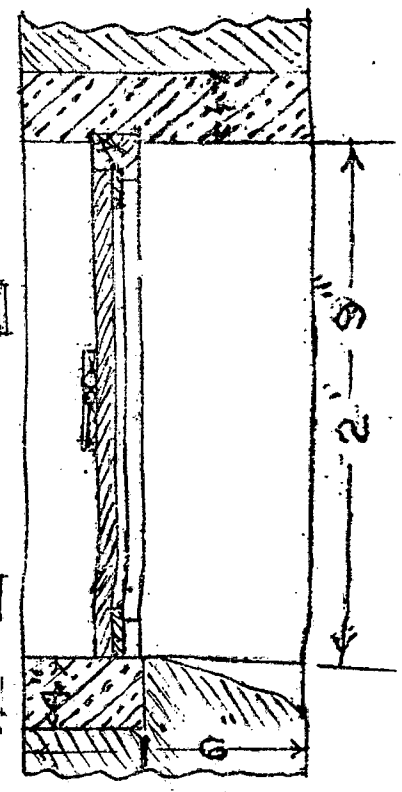
ELEVATION

SECTION

FILLING DOOR

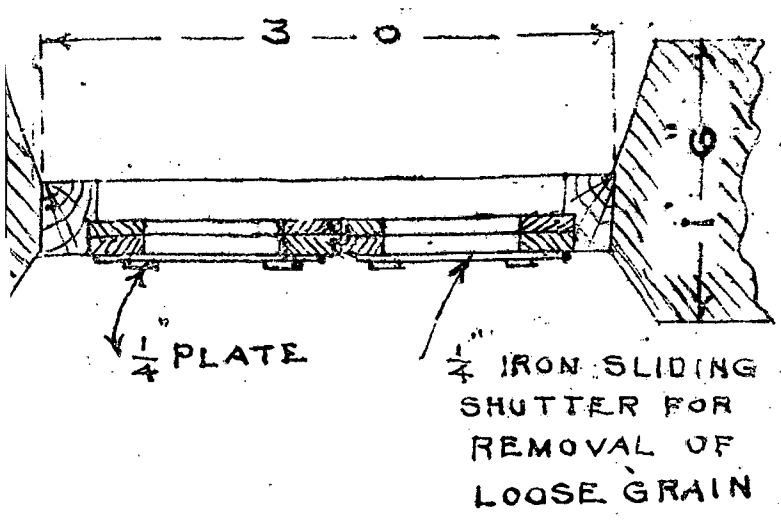
2½" x 2¾"

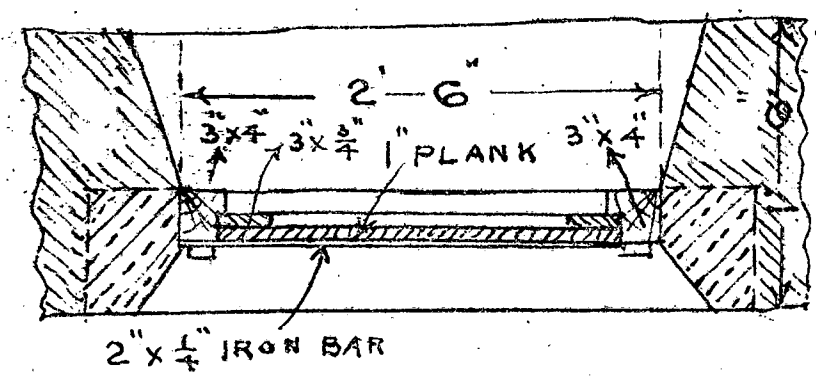




ELEVATION

SECTION





PLAN AT E.F.

PLAN AT C.D.

(TRUE COPY)

(SD) R.F. STONEY
7-10-19

SANITARY ENGINEER TO GOV^T.

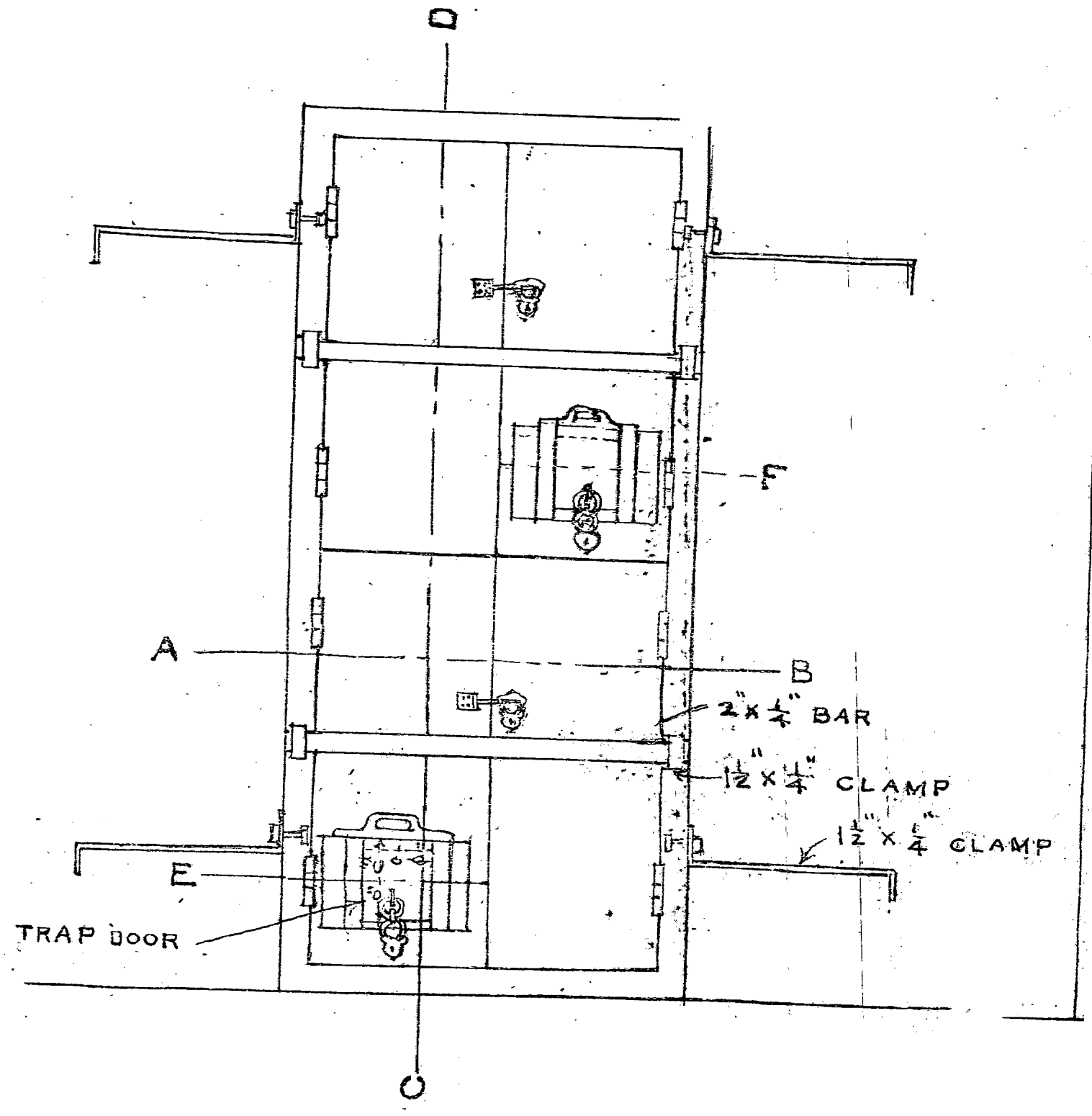
BOARD

SHEET No. 2 OF TYPE

DETAIL DRAWING FOR

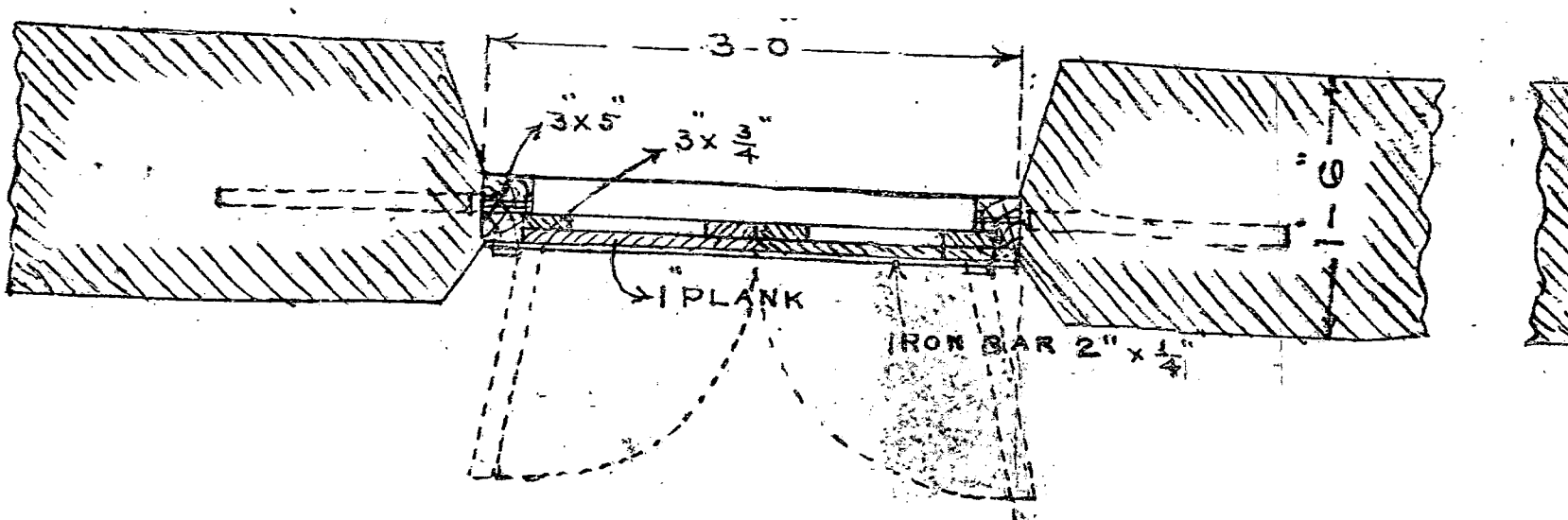
IN RAT PR

SCALE



ELEVATION

S



PLAN AT A.B.

OFFICE OF SANITARY ENGINEER
CHEPAUK MADRS

(SD) C. PEDDIE
3-9-19
SECRETARY
SANITARY

central office Bangalore d/ 31-3-20.

G.R.S. 27]

GENERAL AND REVENUE SECRETARIAT

(Continuation sheet draft form.)

3 Offs

Encl. Say 62-19

G 6429/9 20/9 87

The

Agent, Mysore Railways

Sir,

I am directed to invite your attention to Para 6 of the G.O. No 1869-706 F Dat 9-2-16 & 14-2-20 re Protecting Railway goods sheds free from rat-infestation & to forward herewith for ~~xxx~~ favour of needful action a copy of the G.O. No 271 P & 16-10-19 issued by the Fort St. George Local & Municipal Depts (Plague) re Construction of Rat-proof Granaries & other rat-proof copies of the type designs for the same

I have &c

Offg

1.9.20

Offg 1.9.20 For [illegible]

WD 1249—GPB 10,000—35-1-19

G.R.S. 27]

GENERAL AND REVENUE SECRETARIAT.

(*Continuation sheet, draft form.*)

The ~~President, of the City~~ Municipal Councils of Bangalore (2) Mysore

I am directed to invite reference to para 6 of G.O. No. G. 1186 90-706/San dated 9-8-16 & G.O. No. G. 1186 90-706/San dated 14-2-1920 on the matter of the control of the plague in important grain centres in view to prevent plague infection and to forward herewith for information and such action as the Municipal Councils may deem necessary, a copy of order no 271 P dated 16-10-1919 issued by the Govt of Madras, Local & Municipal Dpts. (Plague) re Construction of rat proof granaries together with copies of type designs for the same

These designs indicate the lines on which bye laws have to be framed for adoption in

311

...municipalities, to regulate the ...
construction of buildings where large quantities of gra...
are expected to be stored. &c.

...together with a copy of his Madras
letter dated 2nd instant and its enclosures

...

G.R.S. 27]

GENERAL AND REVENUE SECRETARIAT.

(Continuation sheet draft form.)

	no of copies
1. Bangalore	15
2. Kolar	12
3. Tumkur	11
4. Mysore	22
5. Shimoga	13
6. Kadur	10
7. Hassan	12
8. Chitaldrug	13
total	108

Sanity 62-19

To
The Deputy Commissioner
of Districts.

Sir,

With reference to para 6 of G.O. no. P. 1869-706 / Ban. 92-10-16 of 4-2-20 on the matter of control of the grain trade in important grain centres in the various principal places I am directed to forward herewith for favour of useful action & distribution among the several municipalities in your district

copies of order no 271 P of 16-10-1919 issued by the Govt of Madras, Local & Municipal depts (Plague) re Construction of rat proof granaries together with copies of the type designs for the same.

These type designs indicate the lines on which bye-laws have to be framed for adoption in

municipalities to regulate the construction
of buildings where large quantities of grain
are expected to be stored

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT (PLAGUE).

G. O. No. 271 P., 16th October 1919.

Type-designs for rat-proof granaries.

Recording the proceedings of the Sanitary Board issuing two—

READ—the following paper:—

Proceedings of the Sanitary Board, No. 406—S., dated 10th September 1919.

Read—the following papers:—

(i) *Letter*—from the Sanitary Engineer to Government.
Dated—the 26th August 1918.
No.—565 G.

(ii) *Endorsement*—by the Sanitary Commissioner for Madras.
No.—D. 2499 S.
Dated—the 3rd October 1918.
Resolution—No. 406 S., dated 10th September 1919.

In connexion with the general conclusions arrived at by the Conference that met at Madras on the 8th and 9th April 1918 to consider the Plague Regulations in force in the Presidency, communicated with G. O. No. 246 P., dated 27th April 1918, the Sanitary Engineer to Government submitted with his letter read above a design, with specification and schedule of quantities, for a rat-proof granary for issue as a type in supersession of design No. III issued with G. O. No. 980 P., dated 5th December 1908. But as this design was found to be defective, the Sanitary Board after careful consideration obtained from the Chief Engineer, Public Works Department, two designs for rat-proof granaries, one for grain store room only based on the Punjab type recommended by Major Norman White, C.I.E., Sanitary Commissioner with the Government of India, and the other for a grain store room with a measuring and packing room attached to it.

2. These two designs are approved as types and will be designated as 'Sanitary Board type-designs Nos. 175 and 176 for rat-proof grain godowns'.

3. A note explaining the necessity for these godowns, and the precautions to be taken, and the specifications and schedules of quantities to accompany these designs are all issued as annexures to these proceedings.

4. Alterations and deviations from these designs to suit local conditions are permissible.

(True extract).

C. PEDDIE,
Secy., Sanitary Board.

To—The Secretary to Government, Local and Municipal Department.
The Sanitary Engineer to Government.
The Sanitary Commissioner for Madras.
The Personal Assistant to the Surgeon-General with the Government of Madras.
The Chief Engineer, Public Works Department.
The Principal, College of Engineering, Madras.
The Resident in Travancore and Cochin.
The Sanitary Commissioner for Burma.
The Inspector-General of Civil Hospitals, Burma.
The Secretary, Board of Public Health, United Provinces.
The Secretary, Sanitary Board, Bengal.
The do do do Bombay.
The do do do Punjab.
The President, Corporation of Madras.
The Chairmen of Municipal Councils.
The Presidents of District Boards.
The do of Taluk Boards.
The Collectors of districts.
The District Medical and Sanitary officers.
The Civil Surgeons.
The Superintending Engineers.
The Tropical Diseases Bureau, Imperial Institute, London.
The Editor the *Local Self-Government Gazette* Madras.

35

No. 271 P DATED 16TH OCTOBER 1919.

ANNEXURE I.

NOTE TO ACCOMPANY THE DESIGNS FOR RAT-PROOF GODOWNS.

Rats are the carriers of the plague bacilli because they convey the rat flea in their fur from place to place and on account of their intimate connexion with man in human dwellings on the one hand and with grain in godowns on the other, it is of paramount importance that the methods of grain storage and grain transport should be such as to afford no refuge for rats. As rats carry fleas that carry infection and as these fleas are distributed in the grain through rats, it is very necessary to protect the grain against rats. For further details on this subject, the reader is referred to the annexures to G. O. No. 246 P., dated 27th April 1918, and G. O. No. 256 P., dated 4th May 1918. The two designs now prepared are expected to be rat-proof owing to the following features :—

(1) The projecting cutstone Cuddapah slab or reinforced concrete slab all round the building at basement level will prevent rats from climbing up to the walls and so gaining entrance into the grain godown.

(2) The floor consists of sand filling in, 4 inches depth of concrete in mortar over it and Cuddapah or granite slabs over the concrete ; it is therefore impervious and will not allow rats to burrow up from below.

(3) The walls are of masonry in mortar and will also prevent rats from burrowing through them.

(4) All corners are rounded and rats cannot easily lodge anywhere in the building.

(5) The door is close fitting and rat-proof.

These designs are intended to serve as guides and not to be rigidly adhered to but may be altered according to local conditions so long as the principle of preventing entrance of rats is not lost sight of.

W. HUTTON,

29th July 1919 *Chief Engineer, P. W. D.*

ANNEXURE II

SPECIFICATION TO ACCOMPANY THE DESIGN FOR A "RAT-PROOF GRAIN GODOWN."

Type-design No. 175.

General.—The godown consists of one grain store room 10 ft. — 10 ft. to hold about 400 cubic feet of grain when the room is filled to a height of 7 ft.

2. *Foundations.*—These will be 2 ft. deep the lower 1 ft. 6 in. being concrete broken brick or stone in lime mortar and the upper 6 in. being burnt brick or stone in lime mortar. The depth and width of foundations should, however, be design to suit the nature of soil and sub-soil at site.

3. *Basement.*—This will be 3 ft. high above the ground level and will be built of burnt brick or stone in lime mortar. At the level of the plinth, there will be a projecting platform in front, of granite stone or ferro-concrete slab 4 in. thick, and 1 ft. 6 in. broad, and in the remaining three sides, the projection of slab will be reduced to 9 in. This provision has been made to prevent rats from reaching the basement. The granite stone or concrete slab under the door-way shall be secured to the basement by suitable clamps as indicated on the drawing. The projecting portion of slab should have a fall of ½ in. outwards. The filling-in of basement should be of sand well rammed, so as to give no refuge for rats.

4. *Superstructure.*—Will be of brick in lime mortar. Rubble stone may be substituted if this is cheaper than bricks.

5. *Flooring.*—Will consist of 4 in. concrete in surki mortar paved with pressed tiles or Cuddapah slabs, or of concrete itself surface rubbed smooth with portland cement, whichever is easily procurable at the locality.

A damp proof course of cuddapah or stone slabs will be provided for all walls at basement level.

6. *Roofing*—This will be of Madras terrace to consist of one course of brick-on-edge, 3" concrete, three courses of flat tiles, and plastered top and bottom with two coats of lime mortar.

7. *Wood-work.*—One of the timbers mentioned in Circular No. 2040 C., dated 27th April 1909, as applicable to table II of Circular No. 234 C., dated 9th January 1908.

8. *Doors.*—This will be battened with teak frames and country wood shutters. Two leaves including clamps and iron fittings, etc., complete to open outwards.

9. *Ventilators.*—will be of teakwood glazed with expanded metal or wire netting, so as to admit light and air.

10. *Finishing.*—The walls in superstructure will be plastered inside and outside with lime mortar one coat and whitewashed two coats. All wood work will be painted two coats of approved quality.

W. HUTTON,

Chief Engineer, P. W. D.

No. 271—P., dated 16th October 1919.

Estimate form—Detail measurements.

Detail of work	Number	Measurements in feet			Area or contents	Total quantity of each description of work
		Length	Breadth	Depth		
		Ft. in.	Ft. in.	Ft. in.		
Type-design No. 175 for a 'Rat-proof Grain Godown'.						
Earthwork excavation for foundations—						
Wall, all round	1	46 0	2 6	2 0	230	...
Total, c. ft. ...			...			230
Filling in basement with sand—						
Godown	1	10 0	10 0	2 6	250	...
Total, c. ft. ...						250
Concrete broken brick in lime mortar—						
Wall, all round	1	46 0	2 6	1 6	173	...
Total, c. ft.		...	...	...	...	173
Brick in lime mortar (foundations and basements)—						
Wall, all round	1	46 0	1 6	3 6	242	...
Total, c. ft. ...						242
Brick in lime mortar (susperstructure)—						
Wall, all round	1	46 0	1 6	10 9	742	...
Parapet including tape cornice	1	50 0	0 9	1 0	38	...
Total, c. ft. ...					780	
Deduct for—						
Door	1	3 0	1 6	6 6	29	
Ventilators	2	1 6	1 6	1 6	7	
Total deduction ...					36	
Net c. ft. less deductions ...						744
'Cutstone works'—						
Front plinth	1	14 6	3 0	0 4	15	
Stone to receive iron clamp	1	4 3	0 9	0 4	1	
Lintel over door	1	4 6	1 6	0 6	3	
Lintel over ventilators	2	2 6	1 6	0 4	3	
Total, c. ft. ...						22
Timber wrought and put up—						
Joists in godowns	6	11 6	0 2½	0 8	9·58	...
Total, sq. ft, say ...	...	...	...			10
Battened doors with teak frames and country wood shutters (four leaves including iron fittings, etc., complete)—						
Godown door	1	3 0	...	6 6	19 5	...
Total, sq. ft. ...	...	...		...	...	19·5
Fixed glazed ventilators with expanded metal or wire-netting between shutters—						
Godown ventilators	2	1 6		1 6	4·5	...
Total, sq. ft. ...	...	...			...	4·5
Flooring with 4" brick jelly concrete rendered smooth by sprinkling 20 lb. of cement for every 100 sq. ft. of surface—						
Godown floor	1	10 0	10 0	...	100	...
Total sq. ft. ...	...	...	...	...	...	100
Terrace roofing with brick on edge, 3" concrete, three courses of flat tiles top and bottom lime plastered—						
Over godown	1	11 0	11 0		121	
Total, sq. ft. ...						121

No. 1271—P., DATED 16TH OCTOBER 1919.

Estimate form—Detail measurements—*contd.*

Detail of work	Number	Measurements in feet			Area or contents	Total quantity of each description of work
		Length	Breadth	Depth		
Plastering with lime mortar one coat and whitewashed one coat.		Ft. in.	Ft. in.	Ft. in.		
Wall (inside)	1	40 0	...	10 0	400	
Wall (outside)	1	52 0	...	14 6	754	
Parapet (top and sides)	1	50 0	...	1 6	75	
Sides of door	2	6 6	1 1½	...	15	
Ventilators	2	4 6	1 6	...	14	
Total, sq. ft.	...	...	...	...	1,258	...
Deduct for—						
Door	1 × 2	3 0	... ...	6 6	39	
Ventilators	2 × 2	1 6	...	1 6	9	
Total deductions	...	...	...	...	48	
Net total, sq. ft.	...	...	...	...	...	1,210
Painting two coats.						
Joists	6	10 0	1 6½	...	93	
Door	1	3 0	6 6	2 3	44	
Ventilators	2	1 6	1 6	1 0	5	
Total, sq. ft.	...	...	...	...	...	142
Cuddapah or stone slabs, 2" thick.						
Exterior wall three sides	1	34 6	2 3	...	78	
Total, sq. ft.	...	...	...	...	...	78
Two locking arrangements with bars, etc.						No. 2
Iron clamps to secure the slabs under door ways						L. S.

Estimate form—Abstract.

Quantity	Description of work	Rate	Per	Amount	Total
		Rs. A.		Rs.	
	TYPE-DESIGN NO. 175 FOR A RAT-PROOF GRAIN GODOWN.				
	Current Madras Rates.				
230 c. ft.	Earthwork excavation for foundations ...	6 0	1,000	1	
250 ,,	Filling in basement with sand ...	5 0	100	13	
173 ,,	Concrete broken brick in lime mortar ...	15 9	100	27	
242 ,,	Brick in lime mortar (foundations and basements)	20 10	100	50	
744 ,,	Brick in lime mortar (superstructure) ...	22 10	100	168	
22 ,,	Cutstone work set in lime mortar ...	2 8	C. ft.	55	
10 ,,	Timber wrought and put up ...	4 0	,,	40	
19·5 sq. ft.	Battened doors with teak frames and country wood shutters (four leaves including iron clamps and fittings, etc., (complete.)	1 14	Sq. ft.	37	
4·5 ,,	Fixed glazed ventilators with expanded metal or wire netting between shutters	1 12	,,	8	
100 ,,	Flooring with 4-inch concrete top rendered with cement (Col. Ellis Patent.)	8 8	100	9	
121 ,,	Terrace roofing with brick on edge 3-inch concrete three courses, flat tiles, top and bottom lime plastered	44 1	100	53	
1,210 ,,	Plastering with lime mortar one coat and white-washed one coat	2 0	100	24	
142 ,,	Painting two coats	2 4	100	3	
78 ,,	Cuddapah slabs 2-inch thick at the basement ...	30 0	100	23	
No. 2	Locking arrangements with bars, etc. ...	5 0	Each.	10	
L. S.	Providing iron clamps to secure the granite slabs under doorways	...	L. S.	2	
	Total ...	...	...	523	
	Contingencies at 5 per cent ...			25	
	Petty supervision at 2½ per cent ...			12	
	Total estimate			560	
	Grand total of estimate			...	560

No. 271—P., dated 16th October 1919.

ANNEXURE III

GENERAL SPECIFICATION TO ACCOMPANY THE ESTIMATE FOR A DESIGN FOR A RAT-PROOF GRAIN GODOWN.

Type-design No. 176.

General.—The rat-proof grain godown consists of one grain store room 10′ — 14′ and one measuring and packing room 10′ — 6′. The grain store room is designed to hold about 1,000 cubic feet of grain if the room is filled in to a height of 7′ 3″.

Foundations will be of 2′ 0″ deep the lower 1′ 6″ being concrete broken brick or stone in lime mortar and the upper 6″ being brick or stone in lime mortar. The depth and width of foundations should be increased to suit the nature of the soil.

Basement will be 3′ high above the ground level and of brick in lime mortar. At the level of the plinth there will be a projecting platform in front of granite stone or ferro-concrete slab 4″ thick and on the remaining three sides the projection will be reduced to 9″ to prevent rats climbing the basement. The granite stone under the doorway shall be secured to the basement by suitable clamps as shown in plan. The top of projecting platform will be given a fall of ½″ outwards.

The *filling in* of the basement should be of sand well rammed.

Superstructure will be of brick in lime mortar. If rubble in mortar is cheaper than brick work, the walls may be built of the former.

Flooring will be of 4-inch concrete in surki mortar and paved with pressed tiles or Cuddapah slabs or concrete and cement (Col. Ellis' specification) whichever is easily procurable at the locality. A damp proof course of Cuddapah or stone slabs will be provided for all walls at basement level.

Roofing will be of Madras terrace consisting of brick on edge 3-inches concrete three courses of flat tiles and the top and bottom lime plastered.

Woodwork.—One of the timbers mentioned in Circular No. 2040-C., dated 27th April 1909, as applicable to Table II of Circular No. 234-C., dated 9th January 1908.

Doors and windows.—Frames of all doors and windows will be of teakwood and all shutters will be of country wood. Discharge holes may be provided in the grain godown door as shown in the detail plan.

Ventilators will be of glazed teakwood frames as shown in the detail plan so as to admit of light and air.

Finishing.—The interior and exterior walls will be plastered with lime mortar one coat and whitewashed one coat. All woodwork, doors and windows will be wood-oiled two coats.

Cost.—The building shown on the drawing is estimated to cost Rs. 1,150 at current Madras rates.

W. HUTTON,
Chief Engineer, P. W. D.

No. 271—P., dated 16th October 1919.

Estimate form—Detail measurements.

Detail of work	Number	Measurements: Length	Measurements: Breadth	Measurements: Depth	Area or contents	Total quantity of each description of work
CONSTRUCTING A RAT-PROOF GRANARY.		Ft. in.	Ft. in.	Ft. in.		
Type-design No. 176.						
Earthwork excavation for foundations.						
Main wall all round	1	69 0	2 6	2 0	345	
Cross wall	1	9 0	2 6	2 0	45	
Pial wall	1	6 0	1 1½	1 0	7	
Total, c. ft.	...	...	...	...	...	397
Filling in basement with sand.						
Grain godown	1	14 0	10 0	2 6	350	
Measuring and packing room	1	6 0	7 0	2 6	105	
Total, c. ft.	...	...	...	...	...	455
Filling in basement with earth.						
Pial	1	6 0	2 3	6 5½	87	
Total, c. ft.	...	...	...	...	...	87
Concrete broken brick in lime mortar.						
Main wall all round	1	69 0	2 6	1 6	259	
Cross wall	1	9 0	2 6	1 6	34	
Pial wall	1	5 0	1 9	1 0	9	
Total, c. ft.	...	...	...	...	...	302
Brick in lime mortar.						
Foundation and basement—						
Main wall all round	1	69 0	1 6	3 6	362	
Cross wall	1	10 0	1 6	3 6	53	
Pial wall	1	6 0	0 9	3 0	14	
Total, c. ft.	...	...	...	...	...	429
Brick in lime mortar (superstructure).						
Main wall all round	1	69 0	1 6	13 6	1,397	
Cross wall	1	10 0	1 6	11 3	169	
Pial wall	1	6 0	0 9	3 10½	17	
Total, c. ft.	...	...	...	...	1,583	
Deduct for—						
Door, large, in front	1	4 0	1 6	7 0	42	
Door, small, in cross wall	1	3 0	1 6	6 6	29	
Door, small	1	2 6	1 6	2 9	10	
Ventilators	2	1 6	1 6	1 6	8	
Lintels	1	12 0	(Volume.)		12	
Total deductions, c. ft.	...	...	...	...	101	
Net total, c. ft.	...	...	...	...		1,482
Brick cornice work including plastering.						
Exterior all round	1	78 0			78	
Total, r. ft.	...	...	...	...	...	78
Cutstone slab.						
Cill of front door	1	6 0	3 0	0 4	6	
Sides of front door	2	4 3	3 0	0 4	9	
Cill of small door	1	4 6	1 6	0 6	3	
Lintel over door, large	1	5 6	1 6	0 6	4	
Do. small	1	4 6	1 6	0 6	3	
Cill of filling door	2	3 6	0 7½	0 4	1	
Over filling door	1	3 6	1 6	0 4	2	
Over ventilators	2	2 6	1 6	0 4	3	
Total, c. ft.	...					31

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Estimate form—Detail measurements—*contd.*

Detail of work	Number	Measurements			Area or contents	Total quantity of each description of work
		Length	Breadth	Depth		
		Ft. in.	Ft. in.	Ft. in.		
Timber wrought and put up—						
Joists in grain store	10	11 6	0 2½	0 8	15·97	
Joists in measuring and packing room ...	7	7 6	0 2	0 5½	4·01	
Total, c. ft. ...	...	...	...	...	...	19·98
Battened door with teak frames and country wood shutters including iron fittings complete—						
Door, large in front	1	4 0	...	7 0	28	...
Filling door	1	2 6	...	2 9	7	...
Total, sq. ft. ...	...	...	...	...	...	35
Battened door with teak frames and country wood shutters (four leaves) with 6 inches square holes and slide shutters including iron fittings complete—						
Door in cross wall	1	3 0	...	6 6	20	...
Total, sq. ft. ...	...	...	...	...	...	20
Fixed glazed ventilators with expanded metal or wire netting between shutters—						
Ventilators	2	1 6	...	1 6	5	...
Total, sq. ft. ...	...	...	...	...	...	5
Flooring with Cuddapah slabs 1½ inches thick over 4 inches brick jelly concrete and pointing with cement—						
Grain godown	1	14 0	10 0	...	140	...
Measuring and packing room	1	6 0	7 0	...	42	...
Total, sq. ft. ...	...	...	...	...	...	182
Flooring with 5 inches concrete top rendered with cement (Colonel Ellis' patent)—						
Over pial	1	3 0	...	6 0	18	...
Total, sq. ft. ...	...	...	...	...	...	18
Terrace roofing with brick on edge 3 inches concrete three courses of flat tiles top and bottom lime plastered—						
Over grain godown, measuring and packing room	1	22 6	11 0	...	248	...
Total, sq. ft. ...	...	...	...	...	...	248
Plastering with lime mortar one coat and white-washed one coat—						
Interior—						
Wall all round grain store	1	48 0	...	11 3	540	...
Do measuring and packing room ...	1	26 0	...	11 3	291	...
At sides of pial	2	3 0	...	7 4½	45	...
Sides of door, large	1	14 0	1 1½	...	16	...
Do small	1	13 0	1 1½	...	15	...
Do small	1	5 6	1 1½	...	6	...
Do ventilator	2	4 6	1 1½	...	10	...
Exterior—						
Wall all round	1	75 0	...	16 0	1,200	...
Basement all round	1	75 0	...	3 0	225	...
Total, sq. ft. ...	...	...	...	...	2,348	...
Deduct for—						
Door, large	1 × 2	4 0	...	7 0	56	...
Door, small	1 × 2	3 0	...	6 6	39	...
Filling door	1 × 2	2 6	...	2 9	14	...
Ventilators	2 × 2	1 6	...	1 6	9	...
Total deductions ...	...	...	...	...	118	...
Net total, sq. ft. ...	...	...	...	...	...	2,230

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Estimate form—Detail measurements—*concld.*

Detail of work	Number	Measurements: Length	Breadth	Depth	Area or contents	Total quantity of each description of work
Wood oiling, two coats—		Ft. in.	Ft. in.	Ft. in.		
Joists in grain godown	10	11 6	1 6½	.....	177	
Joists in measuring and packing room ...	7	7 6	1 1	.....	57	
			Co-efficient			
Door, large	1	4 0	2½	7 0	63	
Door, small	1	3 0	2½	6 6	44	
Filling door	1	2 6	2½	2 9	15	
Ventilators	2	1 6	1	1 6	5	
Total, sq. ft. ...	.....	.....	.....	.....	.....	361
Cuddapah or stone slabs 2 inches thick—						
Exterior wall, three sides	1	57 6	2 3	.....	129	...
Cross wall	1	10 0	1 6	.....	15	...
Total, sq. ft. ...	.....	.....	.....	.....	.....	144
Providing two locks for main door and one for filling door—	.....	.....	.....	.....	.....	Nos. 3

Abstract estimate.

Quantity	Description of work	Rate	Per	Amount	Total
	CONSTRUCTING A RAT-PROOF GRANARY.				
	Type-Design No. 176.	Rs. a. p.		Rs. a. p.	Rs. a. p.
	Current Madras rates.				
397 c. ft. ...	Earthwork excavation for foundations ...	6 0 0	1,000 c.ft.	2 0 0	
455 ,, ...	Filling in basement with sand	5 0 0	100 ,,	23 0 0	...
87 ,, ...	Filling in basement with earth	4 0 0	1,000 ,,	1 0 0	...
302 ,, ...	Concrete broken brick in lime mortar ...	15 9 0	100 ,,	47 0 0	...
429 ,, ...	Brick in lime mortar (foundation and basement)	20 10 0	100 ,,	88 0 0	...
1,482 ,, ...	Brick in lime mortar (superstructure) ...	22 10 0	100 ,,	335 0 0	...
78 r. ft. ...	Brick cornice work including plastering ...	0 10 0	r.ft.	49 0 0	...
31 c. ft. ...	Cutstone slabs	2 8 0	c.ft.	78 0 0	...
19·98 ,, ...	Timber wrought and put up	4 0 0	c.ft.	80 0 0	...
35 sq. ft. ...	Battened door with teak frames and country wood shutters including iron fitting complete.	1 14 0	sq.ft.	66 0 0	...
20 ,, ...	Battened door with teak frames and country wood shutters (four leaves) with 6 inches square holes and slide shutters including iron fittings complete	2 0 0	sq.ft.	40 0 0	
5 ,, ...	Fixed glazed ventilators with expanded metal or wire netting between shutters	1 12 0	sq.ft.	9 0 0	
182 ,, ...	Flooring with Cuddapah slabs 1½ inches thick over 4 inches brick jelly concrete and pointing with cement	27 13 0	100 sq.ft.	50 0 0	
18 ,, ...	Flooring with 5 inches concrete top rendered with cement (Colonel Ellis' patent) ...	8 8 0	100 ,,	2 0 0	
248 ,, ...	Terrace roofing with brick on edge 3 inches concrete three courses of flat tiles top and bottom lime plastered	44 1 0	100 ,,	109 0 0	
2,230 ,, ...	Plastering with lime mortar one coat and white washed one coat	2 1 0	100 ,,	46 0 0	
361 ,, ...	Wood oiling, two coats	1 2 0	100 ,,	4 0 0	
144 ,, ...	Cuddapah slabs, 2 inches thick	30 0 0	100 ,,	43 0 0	
3 Nos.	Providing two locks for main door and one for filling door with hasp and staple	5 0 0	each.	15 0 0	
	Total ...			1,037 0 0	
	Contingencies and petty supervision at 7½ per cent ...			83 0 0	
	Grand total of estimate				1,170 0 0

No. 271—P., DATED 16TH OCTOBER 1919.

Order No. 271 P., dated 16th October 1919.

Recorded.
(True extract).

L. A. CAMMIADE,
Under Secretary to Government (in charge).

To—The Sanitary Board.
Copy to the Sanitary Commissioner with the Government of India.
Agent, South Indian Railway.
,, Madras and Southern Mahratta Railway.
,, Bengal-Nagpur Railway.
Agent and Manager to His Exalted Highness the Nizam's State Railway.
Hon'ble the Resident in Mysore, } with C.L.
,, the Resident at Hyderabad }
Local and Municipal (Local) Department.
,, (Municipal) Department.